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FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF
AVIATION POLICY AND PLANS FEB 83 FAA-AP0-83-1

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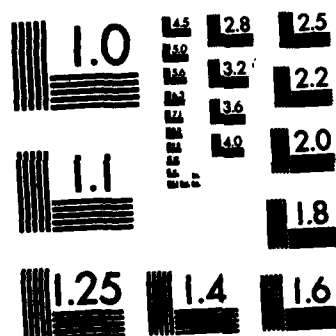
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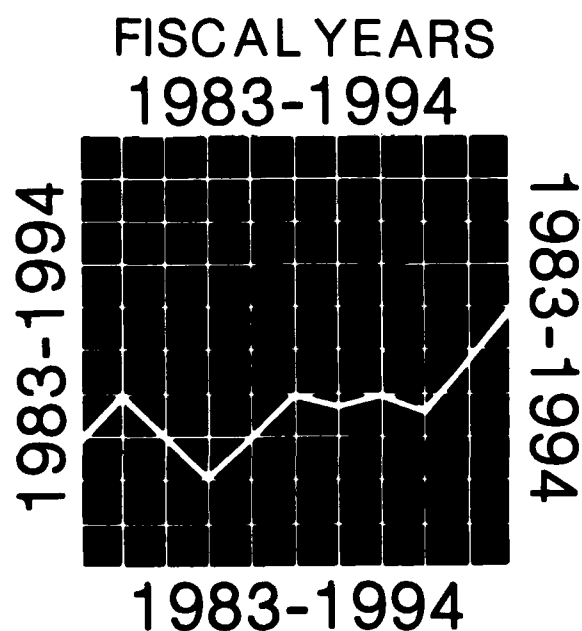
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16. Abstract <p>This report contains the Fiscal Years 1983-1994 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public.</p> <p>The overall outlook for the forecast period is for moderate economic growth, relatively stable real fuel prices, and decreasing inflation. Based upon these assumptions, aviation activity is forecast to increase by Fiscal Year 1994 by 97 percent at towered airports (commuters, 78 percent; air carriers, 24 percent; general aviation, 125 percent; military, 9 percent), 50 percent at air route traffic control centers (commuters, 76 percent; air carriers, 24 percent; general aviation, 105 percent; military, 7 percent), and 54 percent in flight services performed. Hours flown by general aviation is forecast to increase 56 percent and helicopter hours flown 80 percent. Scheduled domestic revenue passenger miles (RPM's) are forecast to increase 81 percent, with scheduled international RPM's forecast to increase by 80 percent and commuter RPM's forecast to increase by 220 percent.</p>			
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Preface

The Federal Aviation Administration forecasts of aviation activity and other selected statistics are developed annually for use in the Agency's planning and decision making. Aviation activity under the control of FAA towered airports, Air Route Traffic Control Centers, and the services provided by the Flight Service Stations are forecast for the several user groups--certificated route air carriers, commuter airlines and air taxis, general aviation, and the military. Also presented are forecasts based on two alternative scenarios: economic expansion and stagflation. The alternative scenario forecasts provide a range around the baseline forecasts for planning purposes both within the FAA as well as for other users of the FAA forecasts.

FAA aviation forecasts employ projections of key economic variables provided by Chase Econometrics, Data Resources, Inc., Evans Economics, Inc. and Wharton Econometric Associates. These projections are combined with projections of aviation variables and professional judgement on the probabilities and consequences of events that affect aviation. The combination is used as input to the econometric models from which the forecasts are generated. Consequently, forecast users are urged to consider the assumptions presented with the baseline forecasts and the alternative scenarios for insight into what effects deviations from the expected state of the general economy will have on aviation.

Harvey B. Safeer

HARVEY B. SAFEER, Director
Office of Aviation Policy and Plans

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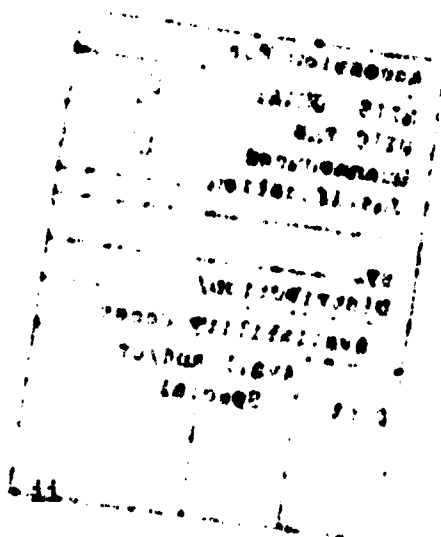


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Chapter I

Forecast Environment

CHAPTER I

FORECAST ENVIRONMENT

The "Airline Deregulation Act of 1978", signed into law on October 24, 1978, represented the culmination of many years of study, discussion and hard work to forge a major legislative action which would completely change Government-industry relationships developed over 50 years. The Act represented the dramatic beginning of a new era for the American air transportation industry.

In the four years since the Act was passed, considerable changes have occurred in the character of the industry. Patterns of service, route structures and equipment usage are changing in response to conditions in the marketplace and changes in operating costs for air transportation services. As of August 1982, some 65 carriers have been added to the long established list of certificated carriers, 44 of these carriers offering scheduled passenger service. Major mergers have occurred and several more are likely. With the sunset of the Civil Aeronautics Board on December 31, 1984, the industry will be left on its own to meet the new demands of the marketplace.

Change has been the hallmark of aviation--change in legislative framework, in technology, in operations, in procedures and in economic conditions. The long-term trend for the industry has been upward. Current changes stemming from economic deregulation are no different from previous changes in that challenges are presented and opportunities for growth exist. What is different is the relationship between aviation activity and the cycle of business activity. Prior to the mid 1970's, aviation growth appeared immune to the vicissitudes of general economic activity. Growth in general aviation and air carrier operations seemed almost immune to short term fluctuations in general economic activity. The first sign that this long term independence might be disintegrating occurred in the fall of 1973 when the Arab Oil Embargo and rapidly rising fuel prices led to a general economic recession and a no-growth year for the scheduled air carrier industry.

The industry resumed growth in 1975, albeit at a slower rate than the preceding decade, with 1978-1979 proving to be peak years for both the economy and for aviation. Subsequently, declining economic activity, rising prices and interest rates and rising unemployment were accompanied by a falloff in demand for air transportation services, both commercial and private.

Cost and resource problems are becoming increasingly critical throughout the aviation community. Many of the commercial aircraft have reached the point where they will require replacement either because they do not meet noise standards or are too costly to operate. The capital to meet the stated needs of the major airlines for the decade of the 80's is estimated at between 60 and 90 billion dollars. These estimates recognize that in the mid-1980's the airline industry hopes to be able to enter a major equipment replacement cycle comparable to the replacement of piston engine aircraft with jet transports. To the extent that airlines do not have adequate earnings and borrowing power to do so, they will be forced to operate less efficient aircraft in the fleet for a longer period of time.

Forecast Summary

The forecasts presented herein are based on improved models of general aviation and air carrier activities and on forecasts of economic variables as contained in the table below.

FAA FORECAST ECONOMIC ASSUMPTIONS
(Calendar Years)

Economic Variables	Historical			Forecast			Percent Average Annual Growth				
	1978	1981	1982	1983	1984	1994	78/81	81/82	82/83	83/84	82/94
Gross National Product (Billions 1972\$)											
Chase	1,436.9	1,502.6	1,477.5	1,513.6	1,573.9	2,123.9	1.5	(1.7)	2.4	4.0	3.1
DRI	1,436.9	1,502.6	1,479.6	1,526.3	1,589.5	2,121.8	1.5	(1.5)	3.2	4.1	3.1
Evans	1,436.9	1,502.6	1,476.6	1,494.1	1,544.2	2,140.6	1.5	(1.7)	1.2	3.4	3.1
Wharton	1,436.9	1,502.6	1,480.0	1,527.7	1,604.3	2,143.2	1.5	(1.5)	3.2	5.0	3.1
Consumer Price Index (CY 1967=100)											
Chase	195.3	272.3	289.3	304.1	322.6	553.1	11.7	6.2	5.1	6.1	5.6
DRI	195.3	272.3	289.7	307.2	326.7	619.1	11.7	6.4	6.0	6.4	6.5
Evans	195.3	272.3	289.0	303.9	317.9	556.6	11.7	6.0	5.2	4.6	5.6
Wharton	195.3	272.3	288.6	304.5	324.6	569.2	11.7	6.0	5.5	6.6	5.8
Fuel Price Index (CY 1972=100)											
Chase	181.6	376.7	353.2	362.2	389.4	1,044.0	27.5	(6.2)	2.6	7.5	9.4
DRI	181.6	376.7	353.2	366.1	391.0	1,024.8	27.5	(6.2)	3.7	6.8	9.3
Evans*	196.4	411.0	387.3	396.4	416.1	778.2	27.9	(5.8)	2.4	5.0	6.0
Wharton	181.6	376.7	370.4	386.3	429.1	947.7	27.5	(1.7)	4.2	11.1	8.1

* Component of CPI (1967=100)

Source: Chase Econometrics, Data Resources, Inc., Evans Economics, Inc. and Wharton Econometric Associates

Aviation activity is expected to reverse three straight years of losses in 1983, reflecting a return of the Air Traffic Control System to normalcy and an upturn in economic activity. Overall, the long-term outlook for aviation is for a relatively strong growth throughout the forecast period, consistent with forecasted long-term economic growth. In any given year there may be some perturbation from the long-term growth trend, but none of the economic models are sufficiently precise to predict such turning points.

Aviation Activity

Domestic air carrier revenue passenger miles are expected to increase at a 5.1 percent annual growth rate during the 1982-1994 time period. A more modest 1.8 percent annual increase in air carrier aircraft operations is anticipated over the same time period. The higher growth in revenue passenger miles relative to operations reflects a continuation of the shift to larger average seating capacity for air carrier aircraft and longer passenger trip lengths.

Air carrier passenger enplanements are also expected to rebound in 1983, although the rate of growth of air carrier enplanements will be lower during the forecast period than that achieved in the 1975 to 1981 period, 4.6 percent versus 6.1 percent. Although delayed somewhat by the sharp decline in fuel prices during 1982, some carriers will begin to replace older aircraft with fuel efficient aircraft that are now on order.

In 1983, the commuter carriers are expected to enplane 17.6 million passengers, 5.8 percent of all fare paying passengers in scheduled domestic air service. By 1994, these carriers are expected to carry 41.5 million passengers and account for 8.1 percent of all domestic passenger enplanements. Some of the commuter (or regional) carriers are expected to switch to small jet aircraft while others will move up in size to larger propeller driven aircraft.

AVIATION ACTIVITY FORECASTS
(Fiscal Years)

Aviation Activity	HISTORICAL			Forecast			Percent Average Annual Growth				
	1978	1981	1982	1983	1984	1994	78/81	81/82	82/83	83/84	82/94
Air Carrier, Domestic Rev. Pass. Enps. (millions)	246.5	264.3	272.6	284.2	304.3	471.1	2.4	3.1	4.3	7.1	4.7
Rev. Pass. Miles (billions)	176.8	197.9	207.5	217.4	233.7	375.9	3.8	4.9	4.8	7.5	5.1
Commuter Carriers Rev. Pass. Enps. (millions)	9.8	15.3	15.8	17.6	19.5	41.5	16.0	3.3	11.4	10.8	8.4
Rev. Pass. Miles (billions)	1.1	2.0	2.1	2.4	2.7	6.9	22.0	5.4	13.2	12.4	10.2
Fleet											
Air Carrier	2168	2475	2483	2505	2537	3120	4.5	0.3	0.9	1.3	1.9
General Aviation (thousands)	184.3	211.0	213.2	215.0	217.1	315.2	4.6	1.0	0.8	1.0	3.3
Hours Flown (millions)											
Air Carrier	5.9	6.3	6.3	6.4	6.4	8.3	1.8	0.8	1.0	0.8	2.3
General Aviation	38.5	41.0	42.6	43.5	44.4	66.3	2.1	3.9	2.1	2.1	3.8

Source: 1978-82 CAB, FAA DATA
1983-94 FAA Forecasts

Nationally, commuter and air taxi aircraft operations are expected to almost double the 1982 volume of 5.1 million operations by 1994. As the larger air carriers continue to rationalize their route systems, commuter airlines will move into the markets abandoned by these carriers, performing more operations with smaller aircraft than those flown by the larger air carriers. In addition, they are expected to develop new markets in smaller communities which show potential for supporting regular scheduled service.

Increased business use of general aviation is reflected in the changing character of the fleet. The more expensive and sophisticated turbine powered part of the fixed-wing fleet is expected to grow by 110 percent between 1982 and 1994. The total fleet (78.8 percent single engine piston aircraft in 1982) will grow by only 48 percent. Fixed-wing turbine powered aircraft represented 3.7 percent of the fleet in 1982. By 1994, the percentage will increase to 5.3 percent.

FAA Workload

Aviation activity at FAA facilities will reverse the decline of the last three years by the end of 1983. The demand for FAA operational services is anticipated to increase during most of the forecast period as a result of resumption of strong growth in aviation activity. Total aircraft operations at FAA towered airports are forecast to increase to 99.7 million in 1994, a 5.8 percent annual growth above the 50.6 million operations in 1982.

Increasing use of avionics by the commuter airlines and by general aviation will contribute most of the growth in instrument operations at FAA towered airports. Instrument operations are expected to increase from 31.6 million operations in 1982 to 53.8 million in 1994, a 4.5 percent annual growth rate.

FAA WORKLOAD MEASURES
(Millions)

FAA Workload Measures	Historical			Forecast			Percent Average Annual Growth				
	1978	1981	1982	1983	1984	1994	78/81	81/82	82/83	83/84	82/94
Aircraft Operations											
Air Carrier	10.1	9.5	9.0	9.3	9.5	11.2	(2.0)	(5.3)	3.3	2.2	1.8
Air Taxi and Commuter	3.8	4.9	5.1	5.4	5.8	9.1	8.8	4.1	5.9	7.4	4.9
General Aviation	50.8	44.6	34.2	39.3	44.6	76.9	(4.4)	(23.3)	14.9	13.5	7.0
Military	2.5	2.5	2.3	2.5	2.5	2.5	-	(8.0)	8.7	-	0.7
Total	67.2	61.6	50.6	56.4	62.4	99.7	(2.9)	(17.9)	11.5	10.6	5.8
Instrument Operations											
Air Carrier	10.4	10.2	9.5	9.7	9.9	11.9	(0.6)	(6.9)	2.1	2.1	1.9
Air Taxi and Commuter	3.1	4.6	4.6	5.1	5.5	9.1	14.1	-	10.9	7.8	5.8
General Aviation	16.3	18.5	13.9	16.3	18.5	28.9	4.3	(24.9)	17.3	13.5	6.3
Military	3.7	3.9	3.6	3.9	3.9	3.9	1.8	(7.7)	8.3	-	0.7
Total	33.5	37.2	31.6	35.0	37.8	53.8	3.6	(15.1)	10.8	8.0	4.5
I/R Aircraft Handled											
Air Carrier	13.6	12.9	12.7	13.0	13.1	15.8	(1.7)	(1.6)	2.4	0.8	1.8
Air Taxi and Commuter	1.9	2.9	3.3	3.5	3.8	5.8	15.1	13.8	6.1	8.5	4.8
General Aviation	7.8	8.9	7.5	8.2	9.0	15.4	4.5	(15.7)	9.3	9.8	6.2
Military	4.7	4.7	4.3	4.6	4.6	4.6	-	(8.5)	7.0	-	0.6
Total	28.1	29.3	27.8	29.3	30.5	41.6	1.4	(5.1)	5.4	4.1	3.4
Flight Services											
Pilot Briefs	18.3	17.7	17.8	18.0	18.9	28.7	(1.1)	0.6	1.1	5.0	4.1
Flight Plans Originated	9.1	8.8	8.5	9.0	9.5	14.3	(1.1)	(3.4)	5.9	5.6	4.4
Aircraft Contacted	10.2	9.6	9.7	9.8	9.9	10.0	(2.0)	1.0	1.0	1.0	0.3
Total	64.9	62.6	62.4	63.8	66.7	96.0	(1.2)	(0.3)	2.2	4.5	3.7

Sources:

1975-82 FAA Data

1983-94 FAA Forecasts

The workload at the Air Route Traffic Control Centers is forecast to increase at a 3.4 percent average annual rate between 1982 and 1994. The increased demand will come primarily from the commuters and general aviation. Commuter aircraft handled at the Centers are projected to almost double over the next 12 years.

In summary, aviation activity will reverse the decline of the last three years and is expected to grow faster than the general economy. Aviation will continue to dominate all other transportation modes in the commercial intercity passenger market. Commuter operations and business use of general aviation are expected to experience greater growth than the larger airlines and personal use of general aviation.

Chapter II

Baseline Forecasts

CHAPTER II

BASELINE FORECASTS

The four years since the passage of the Airline Deregulation Act has witnessed numerous changes in the overall character of the aviation community, changes that have caused both the users and the operators of the National Airspace System to reevaluate their past methods of conducting day to day operations. Relationships and products that had served aviation well in its regulated years are now being realigned to meet the new demands on the system.

Since deregulation, some 44 carriers have been added to the long-established list of scheduled certificated carriers. Four major mergers have occurred with several others under consideration. One major airline and several smaller regional airlines have ceased operations. Significant changes in the route structure of all airlines can be expected to continue for several years. An absolute decline in fuel prices in 1981-82 has permitted certificated air carriers and commuters to operate their current fleet for several additional years, thus, allowing the airlines to delay or cancel aircraft deliveries in the short-term. However, as fuel prices begin to rise once again, the carriers are expected to resume their practice of grounding inefficient aircraft and introducing more cost effective aircraft into their fleets. To help reduce costs, individual carriers will move toward standardization of their fleets by using fewer types of aircraft; however, the overall mix of aircraft using the Nation's Airspace will become more diverse. The existence of large numbers of used aircraft being offered at depressed prices will assure the emergence of several new carriers who will provide low fare service in selected high density markets. New carriers will not be able to use these older, noisier airplanes once the noise rule implementation dates in 1983 and 1985 are reached.

The character of general aviation will also continue to change. An increasing number of people use general aviation to meet the demands on their time. These flyers will increasingly concentrate their activities at those airports where aviation facilities and groundside services are most extensive.

The official forecasts of aviation activity and FAA workload for the years 1983 to 1994 are discussed in subsequent pages. The baseline forecasts are presented in tabular form in Chapter IV.

ECONOMIC OVERVIEW

During Fiscal Year 1982, U.S. oil prices declined by 3.6 percent. The U.S. Consumer Price Index slowed considerably to 7.2 percent. The growth in the Nation's output of goods and services fell considerably below the 5 percent average growth rate experienced during the 1975-1979 period. Gross National Product, adjusted for inflation, declined 1.4 percent.

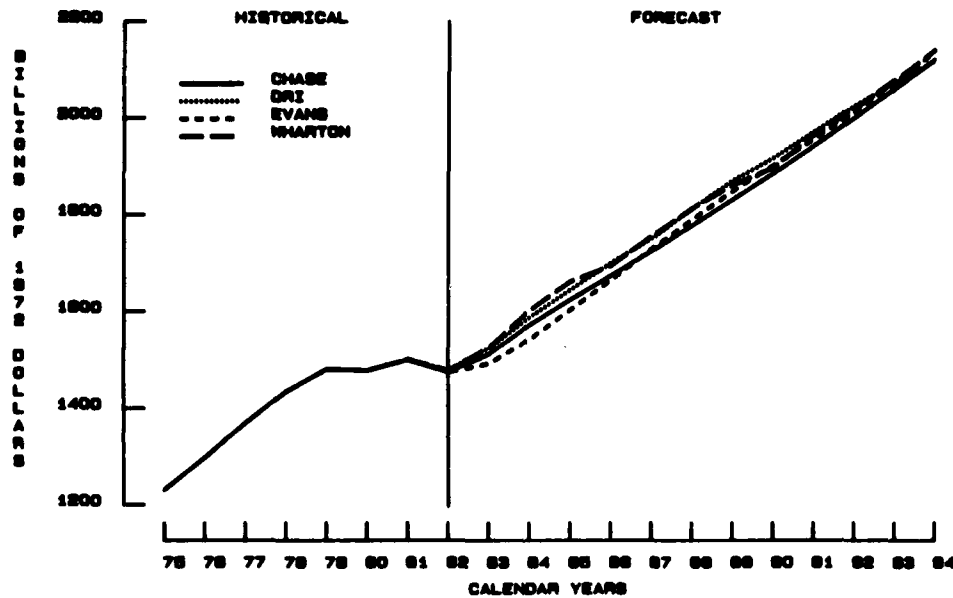
Although the economy is forecast to rebound in 1983, with a further moderation of inflation, there is considerable disagreement as to how strong the recovery will be. Fuel prices are expected to resume their upward trend in 1983, although the increase will be less than the general inflation rate. Low fuel prices, moderate inflationary pressures and an economic recovery in 1983, coupled with a return of the Air Traffic Control System to normalcy, is expected to result in a sharp upturn in aviation activity in 1983.

Forecast Assumptions

The FAA baseline forecasts of aviation activity, presented in tabular form in Chapter IV, were developed using average values of individual observations derived from econometric models. The projections of economic variables used as inputs in the models were prepared by Chase Econometrics, Data Resources, Inc., Evans Economics, Inc. and Wharton Econometric Associates. The principal series used in the forecasts are presented here. Specific assumptions used in the individual models are discussed in the following pages.

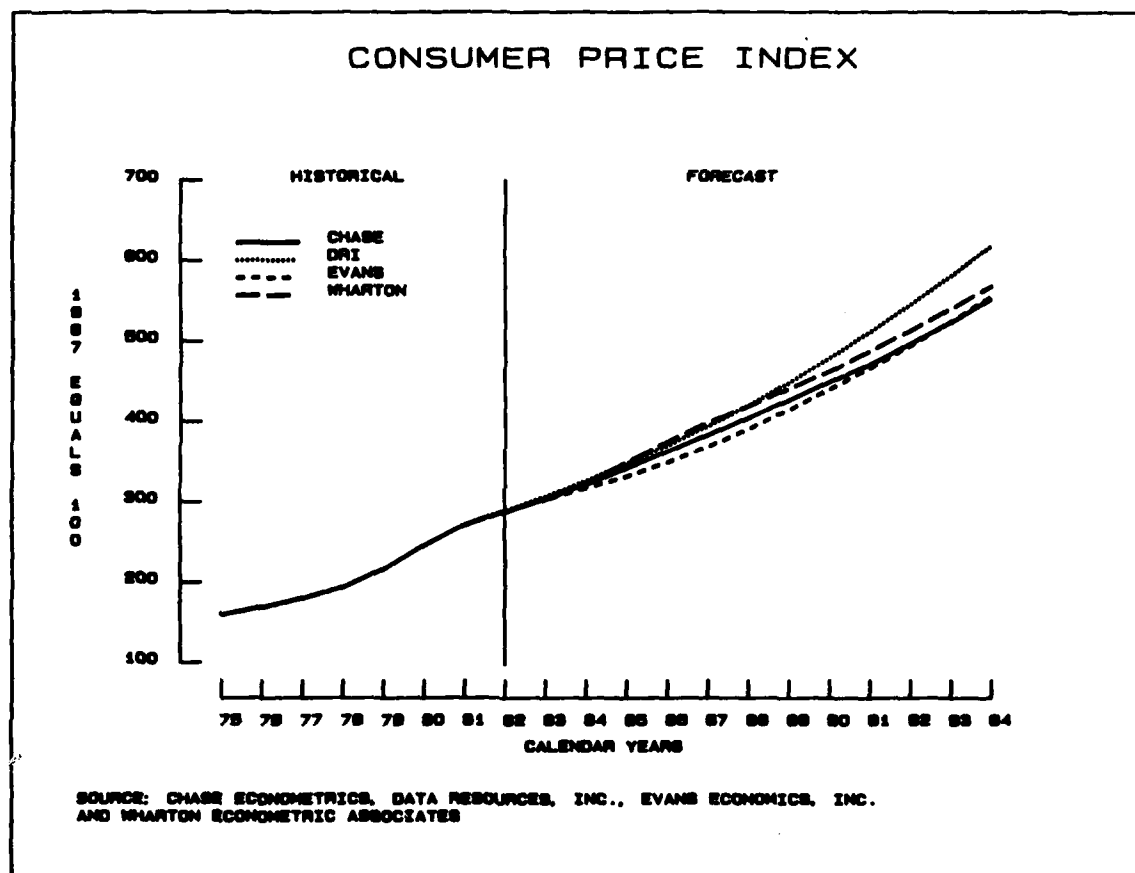
Gross National Product is forecast to grow in real terms, i.e., adjusted for inflation, at an average rate of 3.1 percent throughout the forecast period, slightly below the average rate of 3.3 percent exhibited during the 1975-1981 period. Although there is disagreement regarding the rate of economic growth in 1983, ranging from a low of 1.2 percent to a high of 3.2 percent, there is general agreement that the economy will be in full upswing by 1984, with economic growth expected at between 3.4 and 5.0 percent.

GROSS NATIONAL PRODUCT



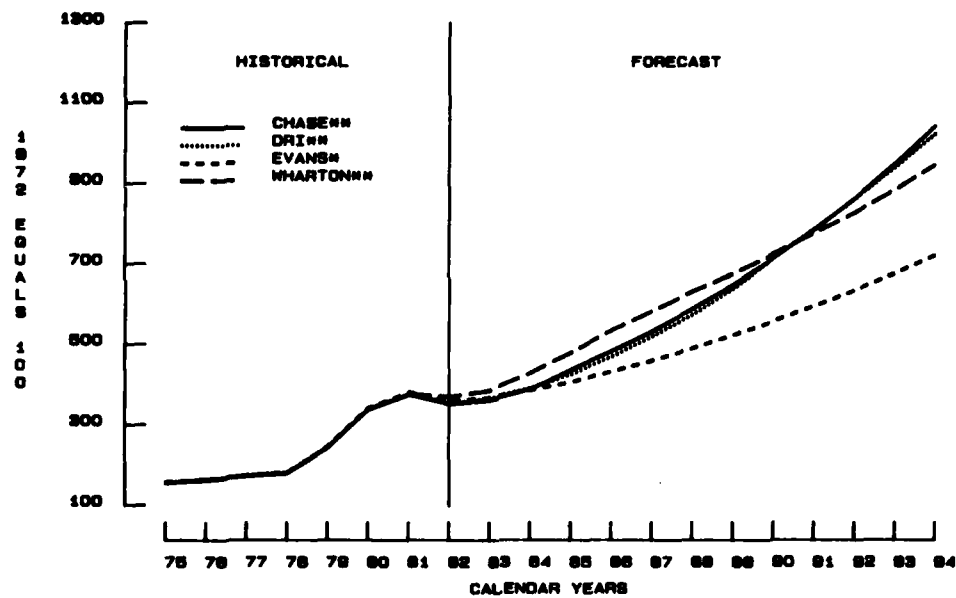
SOURCE: CHASE ECONOMETRICS, DATA RESOURCES, INC., EVANS ECONOMICS, INC., AND WHARTON ECONOMETRIC ASSOCIATES

Consumer prices are forecast to continue to rise, but at a rate considerably below the 1978-1981 rate of 11.7 percent. It is assumed that the Consumer Price Index will rise between 5.1 and 6.0 percent in 1983 and between 4.6 and 6.6 percent in 1984. For the entire forecast period, the average annual rate of increase is expected to be between 5.6 and 6.5 percent.



Fuel prices, although declining in 'real' terms in 1983, are expected to increase at an average growth rate of between 6.0 and 9.4 percent throughout the forecast period. This translates into an increase in 'real' fuel prices of between 0.4 and 3.8 percent annually over the 12 years. The FAA baseline forecast assumes the general availability of fuel for aviation.

FUEL PRICE INDEX



SOURCE: CHASE ECONOMETRICS, DATA RESOURCES, INC., EVANS ECONOMICS, INC., AND WHARTON ECONOMETRIC ASSOCIATES

* COMPONENT OF CPI (INDEXED TO 1972 FOR PLOTTING PURPOSES)
 ** OIL AND GAS DEFLATOR

GENERAL AVIATION FORECASTS

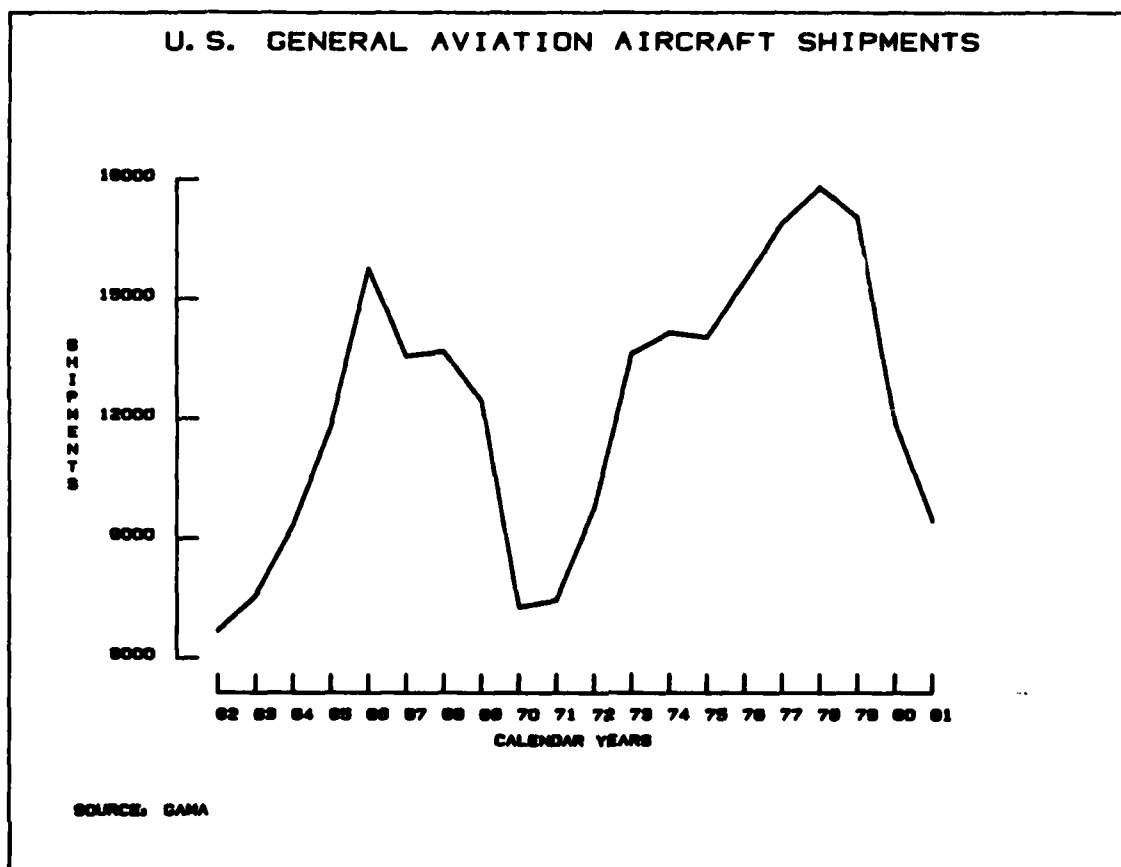
Trends in the overall economy are creating major changes within general aviation. Over the past several years, general aviation has become increasingly important as a means of transportation for business use. Events which have contributed to this are changes in tax legislation, business dispersion and centralized management, changing air carrier route structures, and lower costs relative to competing modes. The aircraft purchased by businesses tend to be the larger more sophisticated types which are intensive users of the air traffic control system. The helicopter industry also represents an area of aviation where a considerable amount of growth and change has taken place. The driving forces behind this are related to the helicopter's reliability, versatility, uniqueness, and relatively lower costs for specific types of operations. These characteristics have contributed heavily to the use of helicopters in off-shore oil and gas exploration and in emergency and rescue operations. The significant growth in the helicopter fleet will pose additional workload and unique problems for air traffic control.

Fleet Composition and Aircraft Shipments

As of January 1, 1982, the general aviation fleet consisted of 213,226 aircraft representing an annual growth rate of 3.7 percent during the 1978 to 1982 period. During this same period, single-engine piston aircraft increased at a yearly rate of 3.0 percent, turbine powered aircraft grew at an 11.0 percent rate, and rotorcraft increased at a 9.9 percent rate. The total fleet increased only 1 percent in 1982. However, the turbine powered fleet experienced an 11.3 percent increase, and the rotorcraft fleet expanded 16.6 percent. While, in the short-term, the growth of the fleet will be less than what has been experienced during the 1970's, the long-term trend suggests a sustained growth close to historical levels.

Shipments of general aviation aircraft (excluding helicopters, balloons, dirigibles, and gliders) declined 56 percent in 1982. Both single-engine and multi-engine piston aircraft deliveries fell approximately 57 percent. Shipments of turboprop and turbojet aircraft declined 52 percent and 37 percent, respectively. Latest industry estimates indicate that 1983 production levels will increase by approximately 6 percent.

The deliveries of general aviation aircraft (excluding helicopters, balloons, dirigibles, and gliders) are characterized by cycles with relatively large variability. For the period 1962 through 1982 two distinct cycles, approximately 10 years in duration, are evident. In 1962, production was at 6,697 units, climbed to a peak of 11,557 in 1967, and then fell to a low of 5,942 in 1970. The cycle during the 1970's reached a peak of 17,811 units in 1978, and then declined to 4,162 in 1982. A comparison of the yearly growth rate of deliveries with that of Gross National Product, adjusted for inflation, indicates that the two rates are highly correlated. Assuming this pattern will continue in the future, sustained growth in the economy should have a significant positive impact on the demand for general aviation aircraft.



Industry sources indicate that approximately 90 percent of the sales of general aviation jet aircraft are intended for business use. Approximately 80 to 85 percent of the turboprop aircraft and about 60 to 70 percent of the multi-engine piston aircraft are purchased for business use. Less than 30 percent of the single-engine piston aircraft are sold for business purposes. However, the percentage of single-engine piston aircraft sales intended for business use has increased from about 10 percent in 1969 to approximately 25 percent in 1978, while the percentage of single-engine aircraft purchased for personal use has declined from 42 percent to 34 percent, and instructional use, from 27 percent to 17 percent during this period.

An indication of the growth in the demand for air traffic control and navigation services by general aviation is the significant growth in the number of aircraft equipped with sophisticated avionics. This trend is most pronounced for piston aircraft and rotorcraft. For example, for the period 1977 through 1980, the piston fleet population grew 19 percent, while the number of aircraft equipped with transponders grew 44 percent, and the number equipped with Instrument Landing Systems (ILS) grew 34 percent. Turbojet and turboprop aircraft typically are equipped to make full use of navigation and air traffic control services. The table below shows the growth rates for 4 types of avionics equipment and the fleet by aircraft type for the period 1977 through 1980.

GROWTH IN AVIONICS EQUIPMENT BY AIRCRAFT TYPE
1977-1980

Aircraft Type	Fleet Population Growth Rate %	Avionics Equipment Growth Rates			
		Communications %	Transponders %	ILS %	Navigation %
Piston	19	21	44	34	23
Rotorcraft	32	32	72	98	50
Turboprop*	44	40	40	41	40
Turbojet	36	36	36	39	39

Source: General Aviation Activity and Avionics Survey, FAA.

Hours Flown

Total general aviation hours flown in FY-1981 was 41.0 million hours, down 1.4 percent from FY-1980. Single-engine piston aircraft accounted for 68 percent of all hours flown, multi-engine aircraft for 16 percent, turbine powered aircraft for 9 percent, and rotorcraft for 7 percent. The single-engine piston aircraft hours flown declined 3 percent in 1981, while turbine powered aircraft hours increased 6 percent, and rotorcraft hours increased 13 percent. During the period 1978 through 1981, single-engine piston aircraft hours flown increased at a 1.1 percent rate, turbine powered aircraft hours grew at a 8.7 percent rate, rotorcraft hours flown grew at a 7.1 percent rate, and total hours flown grew at a yearly rate of 2 percent.

In 1981, personal and instructional use accounted for 34 percent of all hours flown, and business and executive use for approximately 35 percent. In 1970 personal and instructional use accounted for over 50 percent of all hours flown, and business and executive for only 28 percent. Between 1970 and 1981 the use of general aviation for business grew at a 6 percent rate and personal use grew at a 1.6 percent rate.

Pilot Population

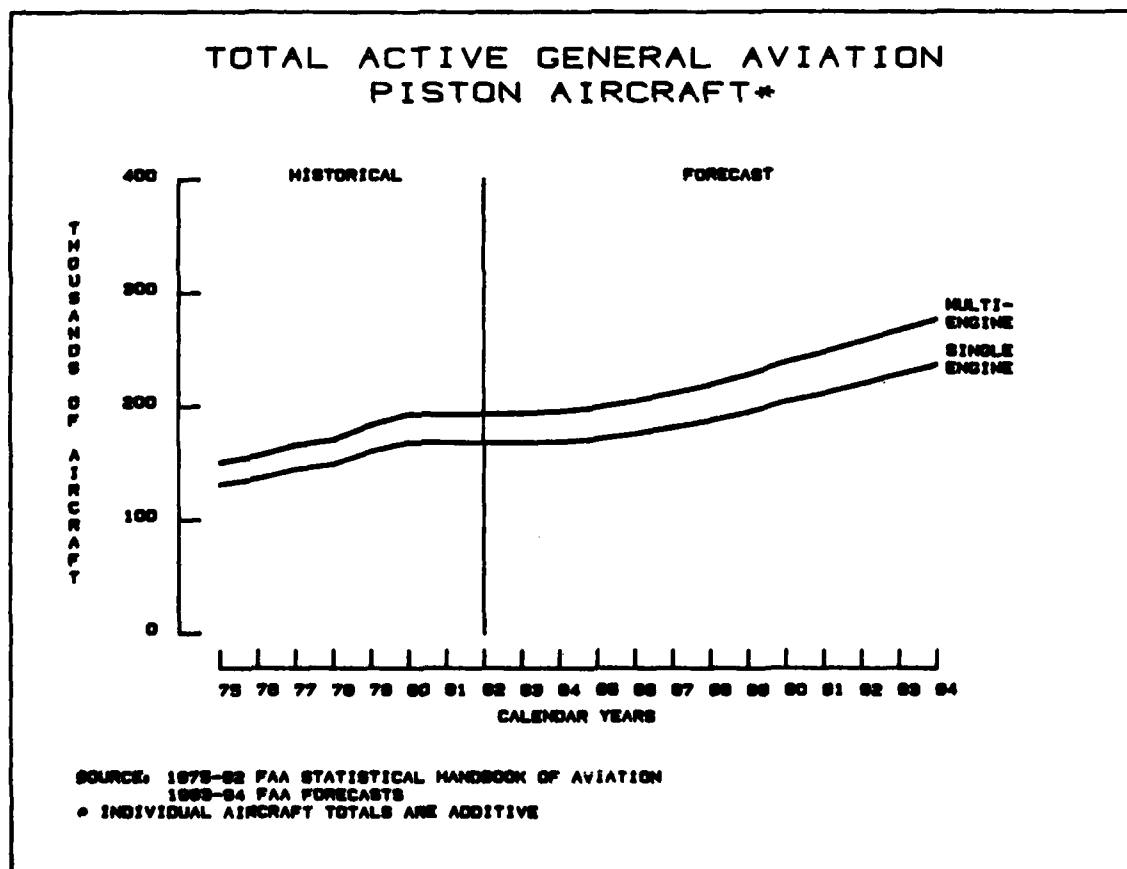
Recent trends within the general aviation pilot population provide further evidence of this sector's changing characteristics. As of January 1, 1982, 43 percent of the licensed pilots possessed an instrument rating, compared to 32 percent in 1970. While the total pilot population is growing at a 1 percent annual rate, the number of instrument rated pilots is growing at a 3.5 percent rate.

*The differences in the growth rates between the turboprop fleet and turboprop aircraft equipped with avionics are due to sampling errors.

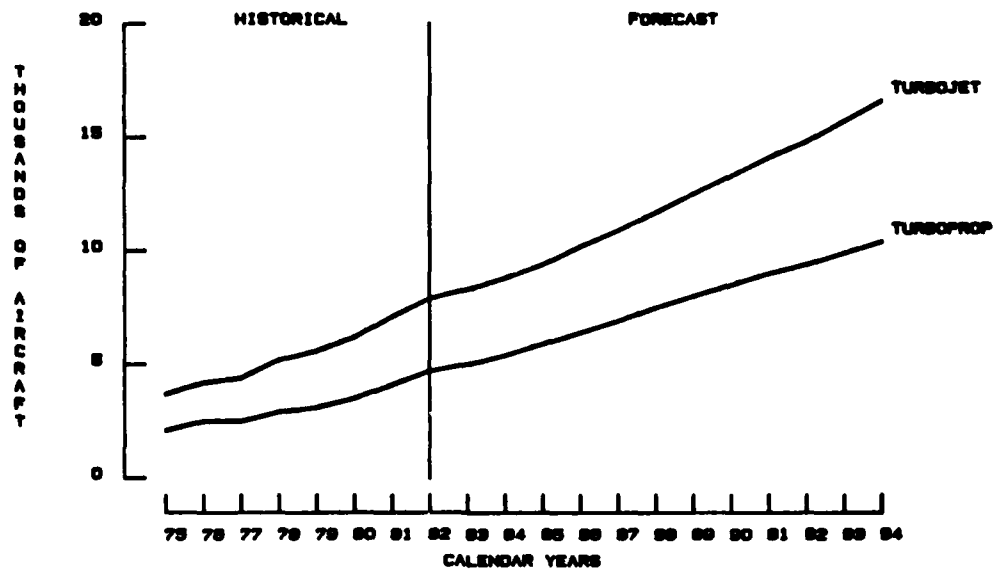
Forecasts

Growth over the entire forecast period for general aviation hours flown is expected to average 3.8 percent per year, resulting in an estimated 66.3 million hours flown in 1994. For the same period, turbine powered aircraft hours flown is forecast to grow 5.8 percent per year, and rotorcraft hours flown 5.0 percent.

The industry will experience a continuation of slow growth in the general aviation fleet in the 1983-1985 time period. There will be variations in the number of aircraft added to the fleet each year due in part to changes in economic conditions. However, the net addition to the fleet will average approximately 8,500 aircraft per year between 1982 and 1994. Active single-engine and multi-engine piston aircraft are forecast to grow approximately 3.2 percent per year. The number of turbine powered aircraft is projected to more than double from 7,900 in 1982 to 16,600 in 1994. The rotorcraft fleet is also expected to show significant growth, increasing at the rate of 5 percent per year. These new sophisticated aircraft are expected to make extensive use of FAA provided services.

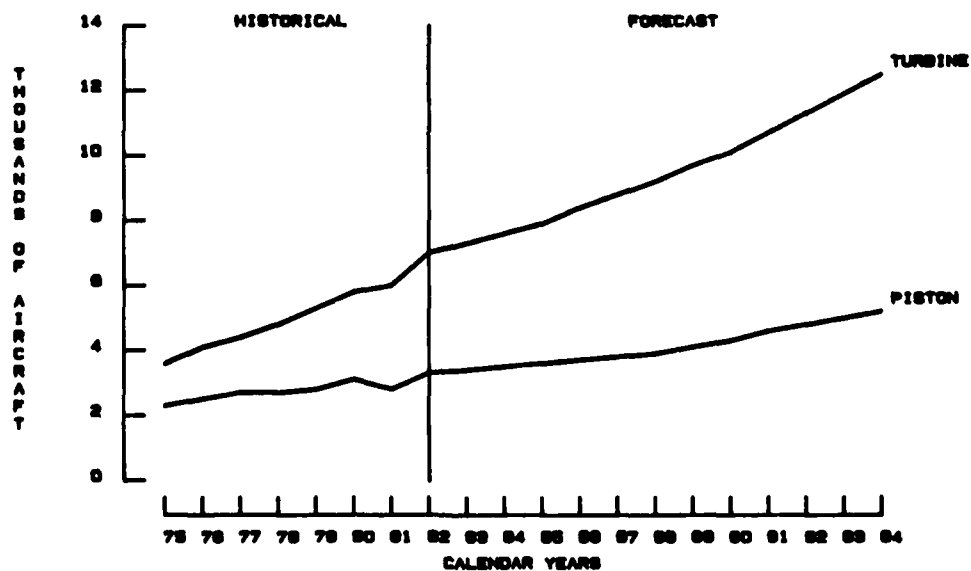


TOTAL ACTIVE GENERAL AVIATION TURBINE POWERED AIRCRAFT*



SOURCE: 1975-82 FAA STATISTICAL HANDBOOK OF AVIATION
1983-84 FAA FORECASTS
• INDIVIDUAL AIRCRAFT TOTALS ARE ADDITIVE

TOTAL ACTIVE GENERAL AVIATION ROTORCRAFT*



SOURCE: 1975-82 FAA STATISTICAL HANDBOOK OF AVIATION
1983-84 FAA FORECASTS
• INDIVIDUAL AIRCRAFT TOTALS ARE ADDITIVE

AIR CARRIER FORECASTS

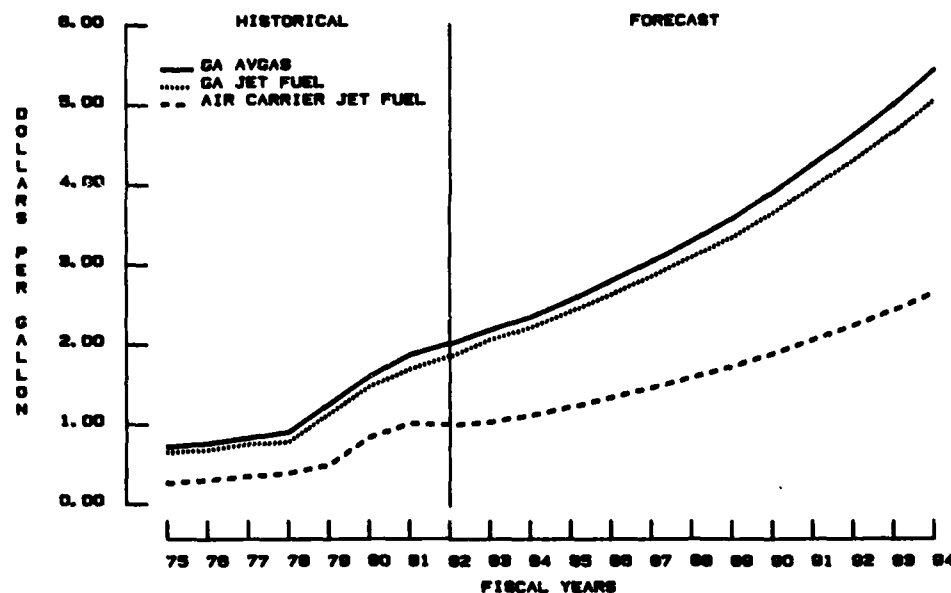
The four years since deregulation have been a time for experimentation and learning for the Nation's air carriers. The air carriers have entered new markets, dropped out of unprofitable markets, rationalized their route systems, and experimented with fares. Perhaps no single year has so exemplified the dynamic transition taking place within the industry as 1982.

First, the Air Traffic Controllers' job action resulted in restrictions being placed on air carrier flow into 22 high density airports. Controller problems forced the FAA to reduce the number of hourly slots available at these airports, thus forcing the air carriers to further rationalize their route systems by eliminating or reducing service to marginally profitable short- and medium-haul markets. Second, the expected upturn in economic activity failed to materialize, forcing air carriers to further experiment with fare cuts and passenger promotions in an effort to stimulate depressed demand for air travel. Third, the failure of Braniff Airways, the first failure of a major airline in the history of U.S. aviation, forced airline management to scrutinize their operations, fleet, workforce, and balance sheets for additional productivity gains or elimination of excesses that impact the bottom-line or profitability of the airline. Fourth, an absolute decline in jet fuel prices tended to make the replacement of the current fleet less cost effective than originally anticipated. This caused airline management to reevaluate both their short- and long-range fleet plans, leading to, in some cases, the outright cancellation of or a delay in the delivery schedule of previously ordered aircraft. Finally, new entrants and smaller regional carriers continued to make inroads into the larger carrier's markets, these gains occurring despite capacity constraints at many airports.

Fuel Prices

During the 1978-81 time period, the air carrier industry was subjected to a 153 percent increase in the price of jet fuel, rising to a peak price of \$1.052 domestic and \$1.168 international in May 1981. However, an oversupply of fuel, combined with a depressed world economy, have substantially lowered jet fuel prices. As of September 1982, domestic fuel prices had declined 10.2 percent from their peak to \$0.944. International fuel prices declined 9.3 percent to \$1.06 per gallon.

U. S. DOMESTIC CIVIL AVIATION FUEL PRICES



SOURCE: 1975-82 CIVIL AERONAUTICS BOARD
1983-94 FAA FORECASTS

In 1978, fuel costs accounted for 19.8 percent of total domestic operating costs and 19.6 percent of total international operating costs. By 1981, fuel costs had increased to 29.7 percent of domestic operating costs and 32.3 percent of international operating costs. Declining fuel prices helped reduce domestic fuel costs to 27.7 percent of operating costs in 1982. International fuel costs declined to 31.2 percent of operating costs.

Fuel prices are projected to resume their upward climb in 1983, increasing by an average of 8.4 percent over the entire forecast period, to \$2.65 per gallon in 1994.

Cost/Revenue Relationship

Since deregulation, the air carriers have introduced a wide variety of discount fares to promote new services and to respond to the new low-cost competition entering established markets. Although operating revenues increased substantially between 1978 and 1981, operating costs increased even more rapidly due to higher fuel and labor costs, the costs of introducing new services and general inflation. During this same period, the carriers petitioned for and were awarded numerous increases in the basic fare level. However, revenues have, for the most part, failed to match the increase in costs. Compounding these problems, the Nation's economy has shown no 'real' growth since 1979.

In fiscal year 1978, the first year under deregulation, the certificated air carriers earned an operating profit of almost \$1.5 billion. In 1980, the industry suffered an operating loss of \$460 million as a two year increase in operating revenues of 42.5 percent failed to match a 54.5 percent increase in operating expenses. Declining fuel prices, combined with wage and productivity concessions from labor, produced a small operating profit in 1981. Operating expenses in 1981 increased by only 9.5 percent while a 19.4 percent increase in the passenger yield produced an 11.3 percent increase in operating revenues, the net result being a profit of \$89 million.

To stimulate traffic demand in the face of an absolute decline in economic activity in 1982, the carriers responded with fare cuts on many of their heavily traveled routes. Although these discount fares generated a 3.5 percent increase in revenue passenger miles, they also led to a general deterioration in passenger yield. Unfortunately, the uneconomic yields led to a 0.1 percent decline in operating revenues, the first year to year decline in aviation history, and an operating loss of \$688 million, despite the fact the carriers were able to hold the increase in operating costs to only 2.1 percent.

Industry Composition

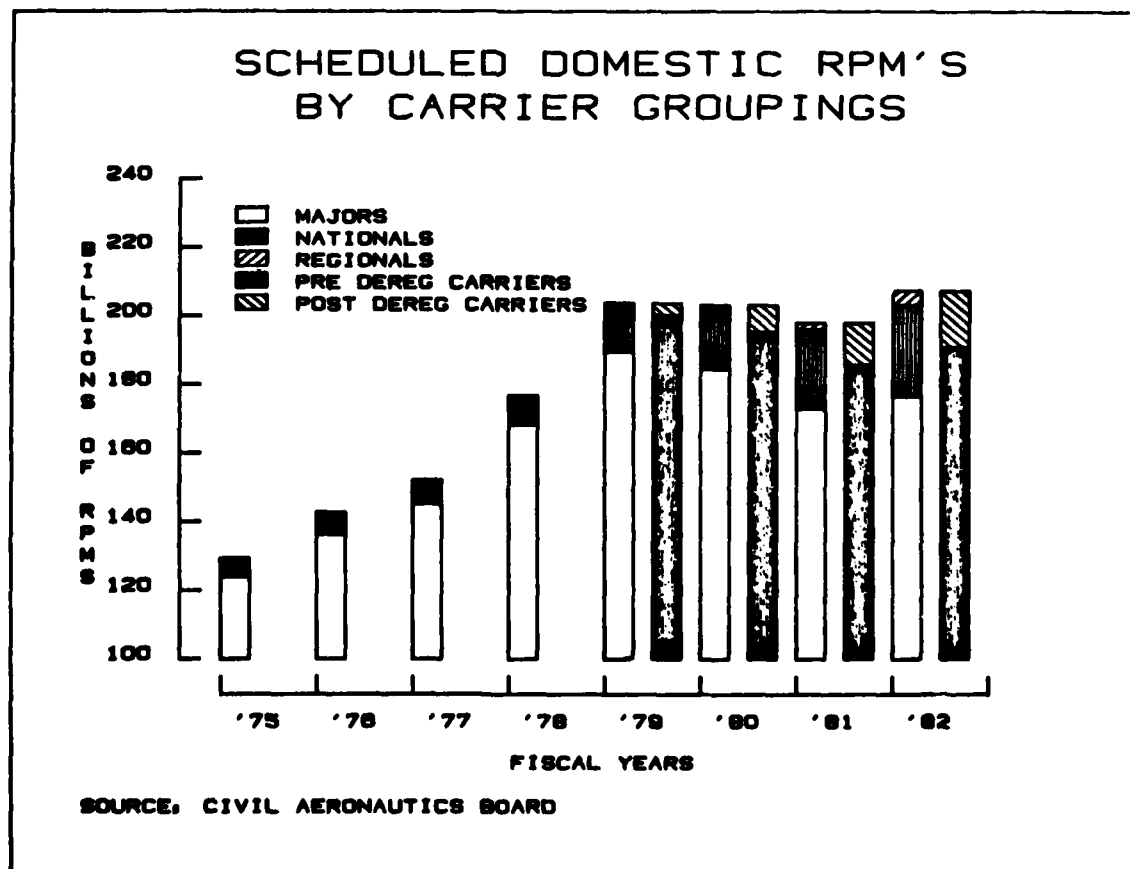
The composition of the domestic air carrier industry has changed markedly since deregulation. The former trunks, in an effort to develop more profitable and efficient route systems, sought to eliminate or reduce service on marginally profitable medium- and short-haul, low density routes. At the same time, these carriers attempted to develop or strengthen hubs and connection complexes at those airports exhibiting high growth potential for their particular route system. The former local service carriers followed a similar pattern but generally at smaller hubs and on lower density and shorter distance markets. Former intrastate carriers in California, Texas and Florida expanded their route systems to include new inter-state and international markets, most in direct competition with the established trunk and local service carriers. Similarly, a number of newly established low-cost carriers began point-to-point service in a number of high density markets, also in direct competition with established carriers. In addition, some 30 former commuter carriers were awarded certificated route air carrier status by the CAB.

The net effect of these changes is reflected in the distribution of revenue passenger miles, departures, trip length and aircraft size for three carrier groupings: Majors, Nationals and Regionals.* The Majors (former Trunks plus Republic and U.S. Air) still dominate the U.S. scheduled domestic air carrier industry, but their proportion of passenger miles and departures has declined significantly. In 1978, the Majors accounted for 95.2 percent of scheduled domestic revenue passenger miles. By 1982, their share of passenger miles had declined to 85.1 percent. During this same time, the Nationals increased

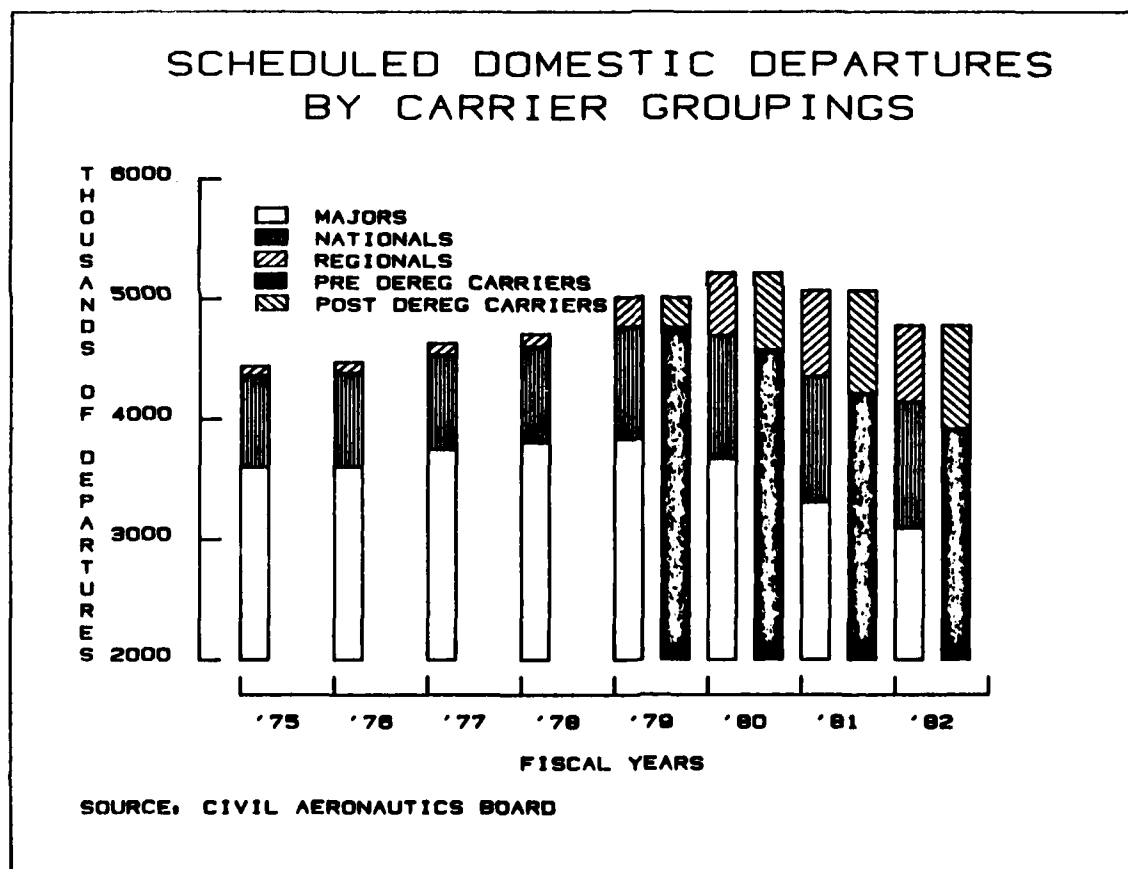
*A list of the carriers included in each grouping can be found on page 45.

their share of passenger miles from 4.7 percent to 12.8 percent and the Regionals from 0.1 percent to 2.1 percent. Viewing this distribution in a slightly different manner, we note that those carriers certificated prior to deregulation accounted for 98.3 percent of schedule passenger miles in 1978. By 1982, the post deregulation carriers had made their presence felt in the domestic carrier industry, reducing the prederegulation carriers share of passenger miles to 92.1 percent.

In terms of traffic, the Majors' revenue passenger miles increased by 4.9 percent since 1978, 2.1 percent in 1982. The Nationals have generated a 218.5 percent increase in passenger miles since 1979, a 15.2 percent increase in 1982. The Regionals' traffic has grown by over 2,000 percent since 1979, 124.1 percent in 1982. Traffic for those carriers certificated prior to deregulation increased by 2.8 percent in 1982; however, traffic in 1982 was 4.6 percent below 1979 levels. At the same time, the post-deregulation carriers' traffic has increased by 376.7 percent since 1979, 34.5 percent in 1982.



The Majors' share of scheduled domestic departures declined from 80.8 percent in 1978 to 64.9 percent in 1982. At the same time, the Nationals increased their share of departures from 17.0 percent to 22.1 percent and the Regionals from 2.2 percent to 13.0 percent. By 1980, the post-deregulation carriers had increased their share of domestic departures to 17.8 percent. In terms of actual departures, the Majors performed almost 19.0 percent fewer departures in 1982 than they had in 1978. The number of departures performed by Nationals and Regionals increased by 31.8 percent and 517.3 percent, respectively, during the same time period. Prederegulation carrier departures declined by almost 18.0 percent between 1978 and 1982 while the post-deregulation carriers increased their departures by 236.4 percent. The shifts in the distribution of and absolute number of passenger miles and departures shown above reflect, to some extent, the impact that the entry of new carriers and deregulation has had on the larger established air carriers.



Between 1978 and 1982, the Majors increased their passenger trip length from 766 miles to 853 miles, an increase of 87 miles. At the same time, the Nationals increased their trip length by 172 miles, from 323 miles to 495 miles. The Regionals increased their trip length from 171 miles to 364 miles, an increase of 193 miles.^{1/} The average aircraft size of the Majors increased from 141 seats in 1978 to 161 seats in 1982, the Nationals from 76 seats to 121 seats and the Regionals from 30 seats to 65 seats.^{2/}

For the most part, these shifts in trip length and aircraft size reflect the different approaches of, and the extent to which, the respective carrier groups have responded to changes in the economy and the market entry and exit freedom. These shifts also reflect the carriers' attempts to best utilize their fleets in the most fuel efficient and profitable manner.

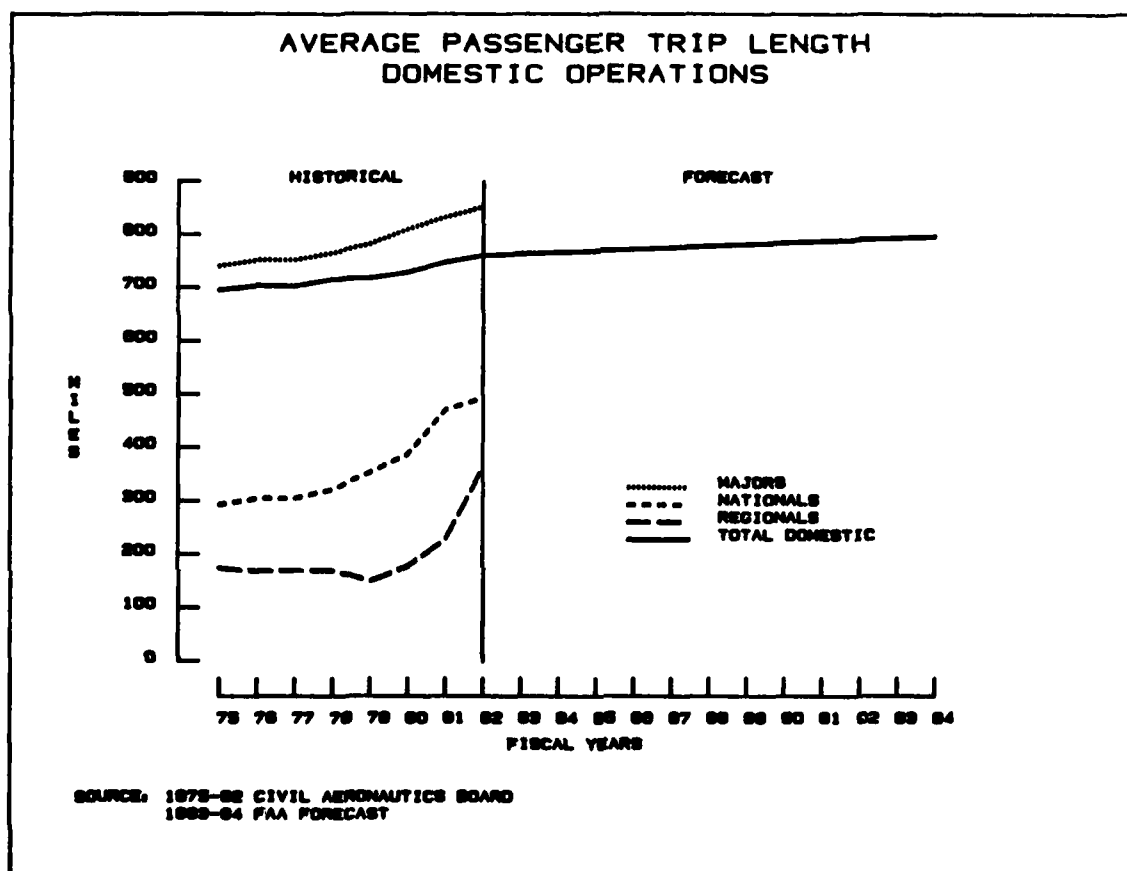
Forecast Assumptions

The baseline forecasts of air carrier activity over the next 12 years anticipates that the industry will continue to be affected by the deregulation process for several more years. While it is impossible to foresee all the changes that will occur in the commercial aviation industry in the years ahead, it is likely that there will be some additional mergers of carriers, that we will see the emergence of several new low-cost airlines, and that one or more carriers may cease operations. On the other hand, the resultant route systems and service patterns available to the traveling public will almost certainly reflect a better balance of service in terms of trip frequencies and fares than would be the case under a more closely regulated system. The carriers will be able to continue their experimentation with innovative ways of developing travel markets. Likewise, the carriers will be able to come closer to utilizing their particular fleets of aircrafts in the most fuel efficient and profitable manner.

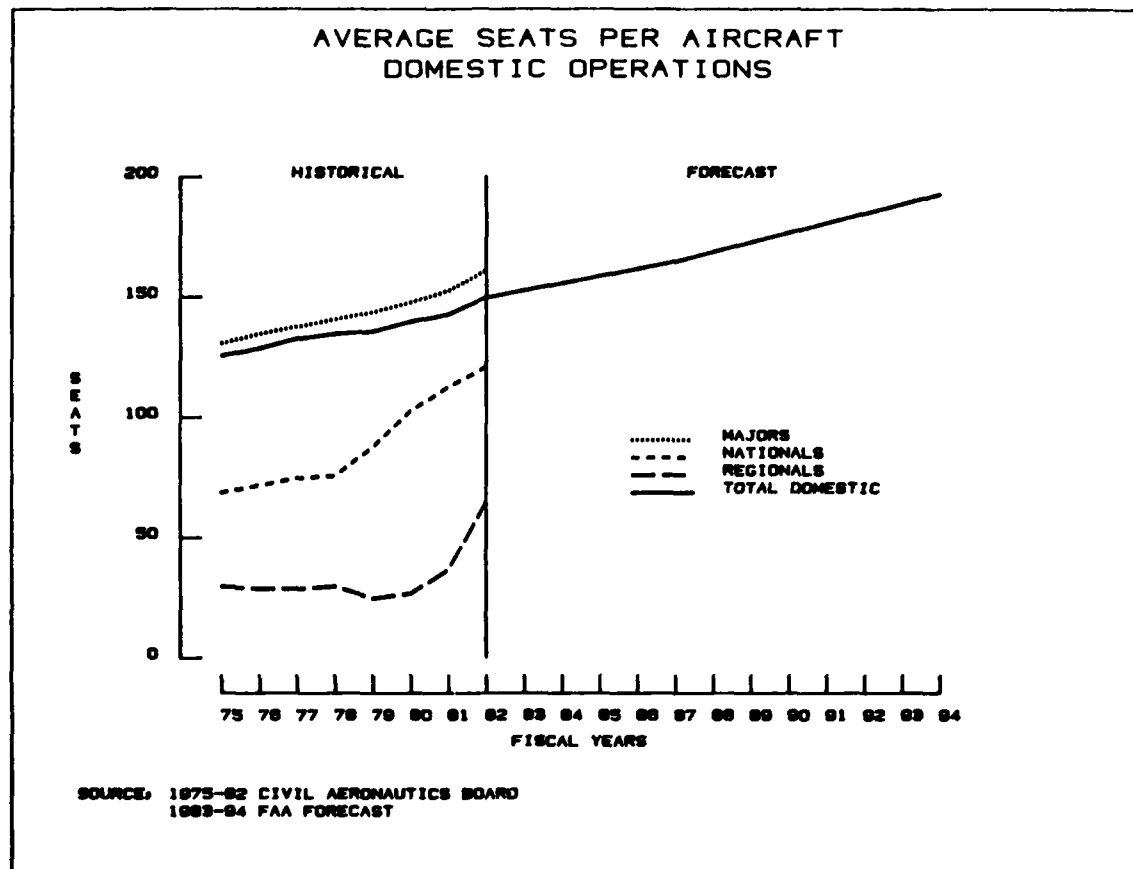
With respect to specific assumptions, it is anticipated that the type of route structure changes evident during the 1978-1982 period will moderate somewhat during the forecast period. It is anticipated that the average domestic passenger trip length, which increased by 45 miles since 1978 and 32 miles in the last two years alone, will resume its long-term historical growth rate of two to three miles per year in 1983. The average passenger trip length is projected to increase from 762 miles in 1982 to 798 miles in 1994. Based upon the changing structure of the domestic air carrier industry, it is felt that an average domestic trip length of 798 miles is a reasonable expectation and well within any upper bound.

^{1/} See Figure on Page 24.

^{2/} See Figure on Page 25.

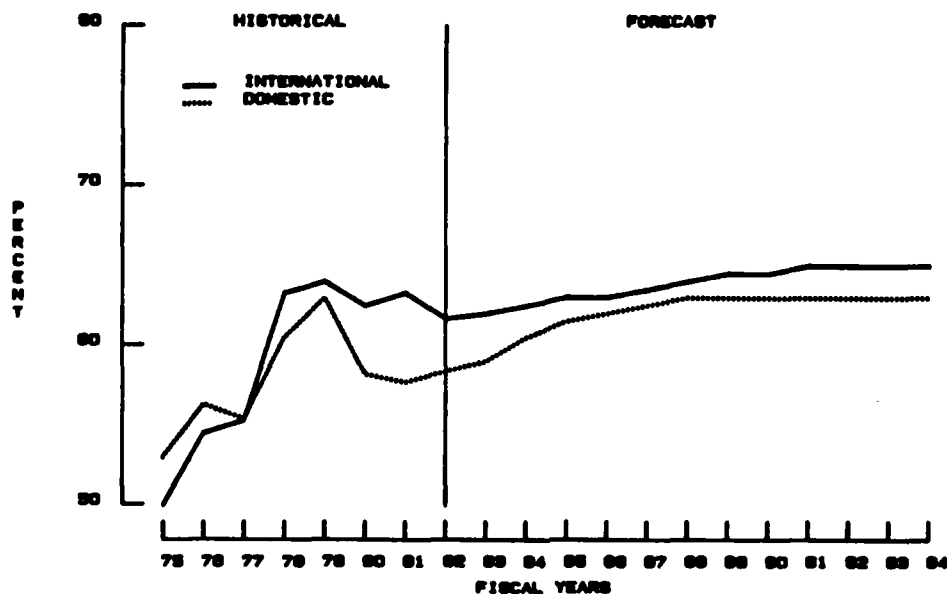


Declining fuel prices are expected to slow the trend toward replacement of older aircraft with quieter, larger capacity, and more fuel efficient aircraft. The industry's average seating capacity, which increased by seven seats in 1982, is expected to resume its long-term historical growth of three to four seats per year in 1983. The average seat size of the domestic fleet is forecast to increase from 150 seats in 1982 to 193 seats in 1994.



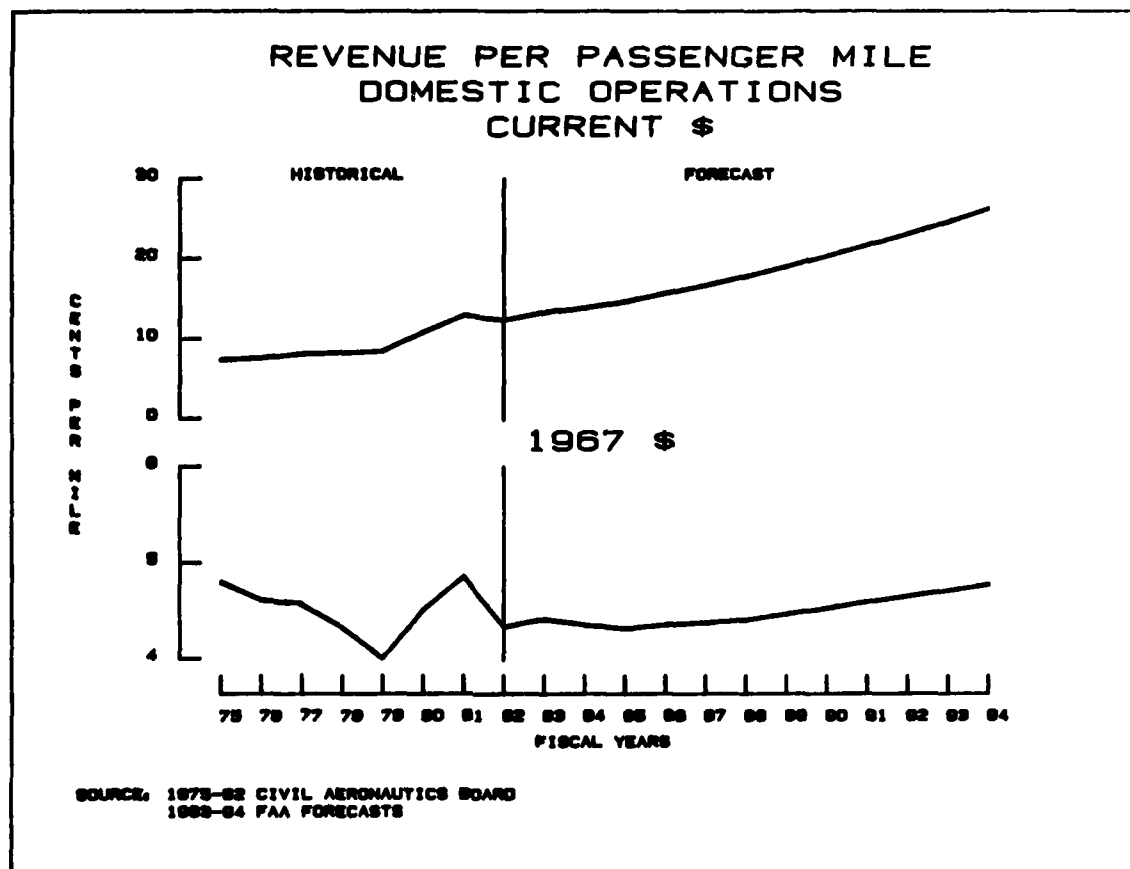
The seat capacity of domestic air carriers is projected to increase by an average of 4.4 percent over the next 12 years as system capacity constraints are removed and the Air Traffic Control System returns to normalcy. Based upon projected capacity and traffic levels, the domestic load factor is expected to increase from 58.4 percent in 1982 to 59.0 percent in 1983 and 60.5 percent in 1984. Domestic load factors are then forecast to increase to 63.0 percent by 1988 and maintain that level throughout the remainder of the forecast period. The international load factor is projected to increase from 61.7 percent in 1982 to 64.0 percent in 1991 and remain at that level throughout the remainder of the forecast period.

U. S. CERTIFICATED AIR CARRIERS PASSENGER LOAD FACTOR



SOURCE: 1975-82 CIVIL AERONAUTICS BOARD
1983-84 FAA FORECASTS

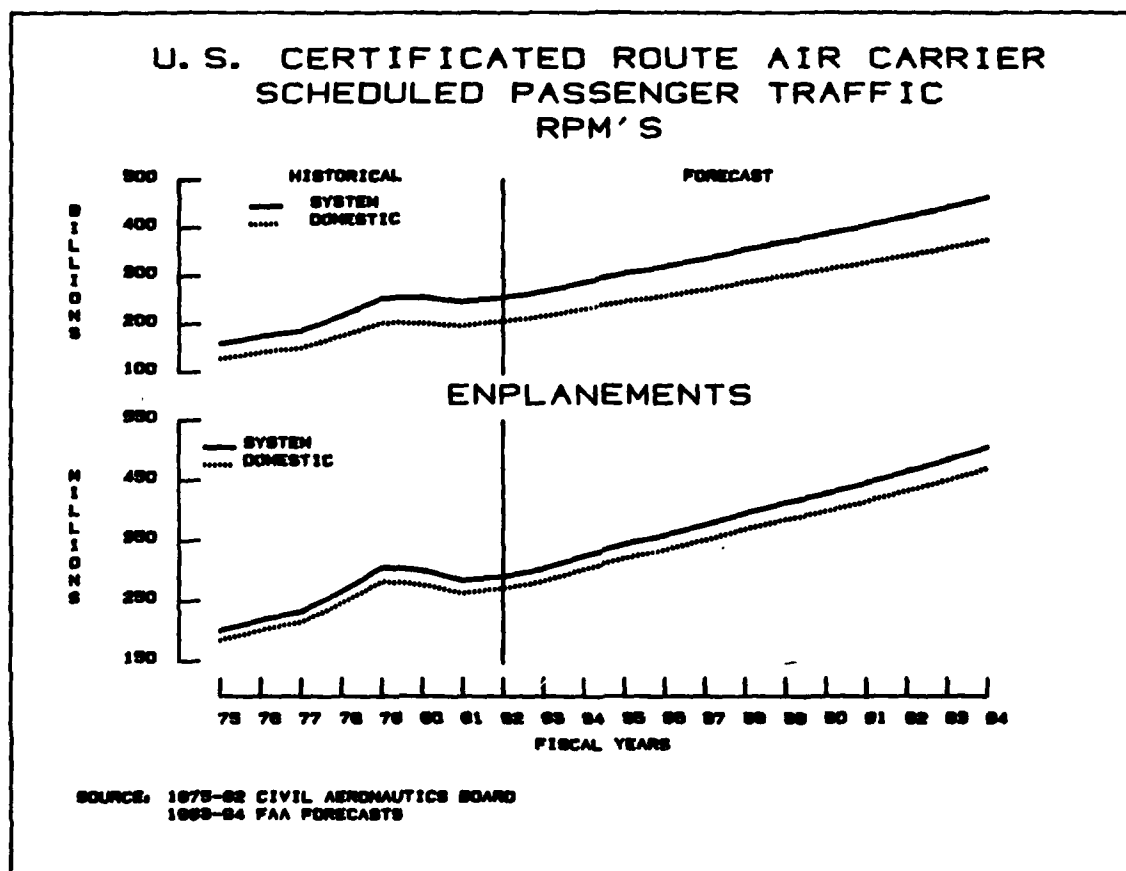
The average revenue received per passenger mile (yield) declined by 4.1 percent in 1982, almost 11 percent in 'real' terms, owing largely to the fare wars that occurred during much of the year. An expressed need for the carriers to return to profitability and an increase in the passenger ticket tax from 5.0 to 8.0 percent, effective September 1, 1982, is largely responsible for the projected 7.6 percent increase in yield in 1983. For the entire forecast period, it is anticipated that the yield will increase at a more moderate 6.4 percent annual rate, from 12.4 cents in 1982 to 26.3 cents in 1994. In 'real' terms, the yield is forecast to increase by 1.8 percent in 1983 and then decline by 2.3 percent over the next two years. For the entire forecast period, 'real' yield is forecast to increase by an average 0.8 percent, from 4.3 cents in 1982 to 4.8 cents in 1994. The significantly lower growth in 'real' yield is based on the assumptions of further system optimization, greater market competition, and the introduction of new, larger, more fuel efficient aircraft with lower unit operating costs than today's aircraft.



Forecasts

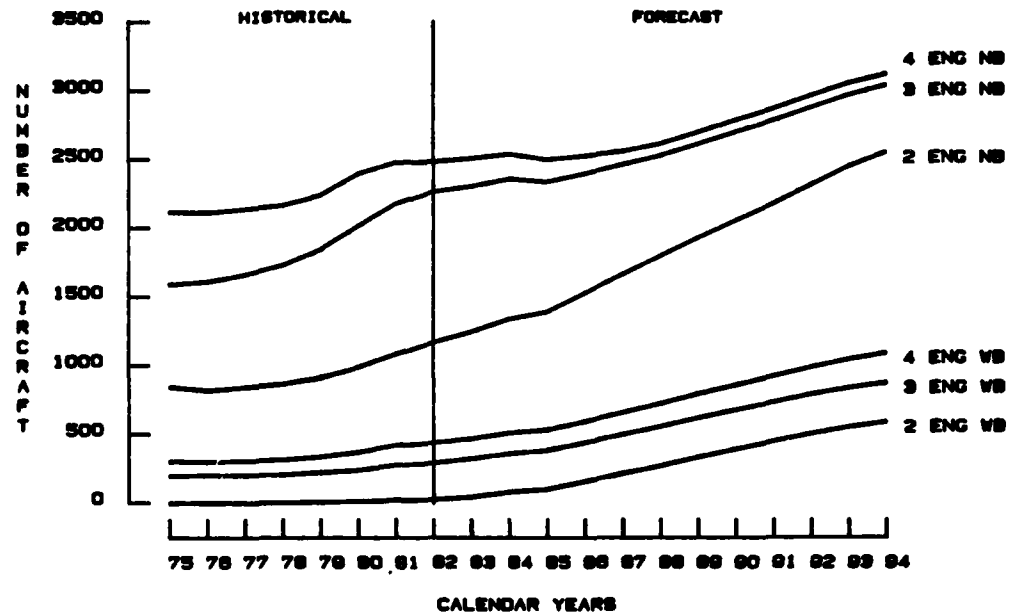
Air carrier domestic enplanements increased by 3.1 percent in 1982 to 272.6 million, reversing a two year decline in enplanements. This reversal is expected to continue throughout the forecast period, with enplanements projected to increase 4.3 percent in 1983, 7.1 percent in 1984 and 6.0 percent in 1985. For the entire forecast period, growth in domestic enplanements is expected to increase at an average annual rate of 4.7 percent to 471.1 million passengers in 1994. International enplanements are forecast to increase from 19.7 million in 1982 to 35.4 million in 1994, an average annual growth rate of 5.0 percent.

After two consecutive years of decline, domestic revenue passenger miles grew by 4.9 percent in 1982 to 207.5 billion. Domestic revenue passenger miles are forecast to grow 4.8 percent in 1983, 7.5 percent in 1984 and 6.4 percent in 1985. Over the entire forecast period, domestic passenger miles are projected to increase an average of 5.1 percent annually, to 375.9 billion. International passenger miles are also forecast to increase at an average annual growth rate of 5.1 percent, from 49.3 billion in 1982 to 88.9 billion in 1994.



Based upon the projections of air carrier traffic, seat capacity and load factor, the U.S. commercial airline fleet is forecast to increase from 2,483 large jet aircraft in 1982 to 3,120 aircraft in 1994. The growth in the air carrier fleet averages 1.9 percent or 53 aircraft annually. By far the largest growth occurs in two-engine aircraft, with two-engine narrow-body aircraft (DC-9, B-737, B-757) growing by an average 61 aircraft annually and the two-engine wide-body aircraft (A-300, B-767) increasing by an average 47 aircraft annually. The three-engine narrow-body (B-727), and four engine narrow-body (B-707, DC-8) aircraft will decline in absolute number over the forecast period. Wide-body aircraft, which accounted for 17.7 percent of the fleet in 1982, is expected to account for almost 35 percent of the fleet in 1994.

TOTAL LARGE JET AIRCRAFT IN U. S. COMMERCIAL AIRLINE SERVICE BY AIRCRAFT TYPE*



SOURCE: 1975-82 FAA AIRCRAFT UTILIZATION AND PROPULSION RELIABILITY REPORT
1983-84 FAA FORECASTS

* INDIVIDUAL AIRCRAFT TOTALS ARE ADDITIVE

COMMUTER AIRLINE FORECASTS

Between 1975 and 1981, commuter airlines' passenger enplanements grew at an annual rate of 15.6 percent while revenue passenger miles increased at a 19.9 percent rate. In 1982, total commuter enplanements grew by only 3.3 percent and passenger miles by 5.4 percent, reflecting in part the impact of the Air Traffic Controller's job action and in part the removal of Altair from 1982 statistics because of its conversion to a larger jet fleet. In the 48 conterminous states, 1982 enplanements and passenger miles grew by 0.7 percent and 3.0 percent, respectively.

The number of commuter carriers has grown very rapidly over the past decade as new carriers were established and air taxi operators received certification for scheduled service. Since deregulation, some 30 former commuter carriers petitioned for, and were awarded, certificated route air carrier status for all or part of their route networks.

Recognition and Growth

Passage of the Airline Deregulation Act in 1978 may be considered one of the single most important events which focused attention on the commuter airlines industry. It raised the maximum number of seats permitted in a commuter aircraft to 56, later increased to 60 by Civil Aeronautics Board regulatory action. For the first time, the Act made these smaller carriers eligible for Federal loan guarantees for aircraft purchases and also extended subsidy qualification to them under the CAB's Essential Air Service Program. While only a small portion of commuter aircraft and markets are supported by these programs, passage of the legislation has contributed to a greater awareness of these carriers in their markets.

For the past several years, the larger air carriers have embarked upon a program to rationalize their route structures so as to increase aircraft utilization and fuel efficiency. The result has been that the commuters have been able to move into those markets which were no longer served by the larger jet aircraft of the trunk and local service carriers. In most cases, the affected communities have gained from commuter replacement of the air carriers. In general, where replacement of service has occurred, the communities are offered greater schedule frequency than the air carriers could afford, given their large aircraft and the low passenger density of the markets. In many markets, demand has substantially increased as a result of the greater schedule frequency.

There is a growing trend toward utilization of new, larger turbo-prop aircraft by commuter carriers. As such, several aircraft manufacturers have development plans to design new aircraft for the thin, short-haul markets serviced by the commuters, one more indication of the marketplace presence enjoyed by these carriers. In the past, commuters were largely restricted to the use of general aviation aircraft. Today, manufacturers in the United States and, more significantly, in other countries are delivering aircraft designed to more efficiently serve commuter markets. These larger aircraft are proving attractive to travelers accustomed to the amenities of the air carrier jets.

With the move to larger aircraft and greatly expanded route structures, many of the commuter carriers resemble the local service carriers of an earlier day. Improved passenger service, joint fares, reservation and schedule tie-ins with the major carriers contribute to their ability to serve the public.

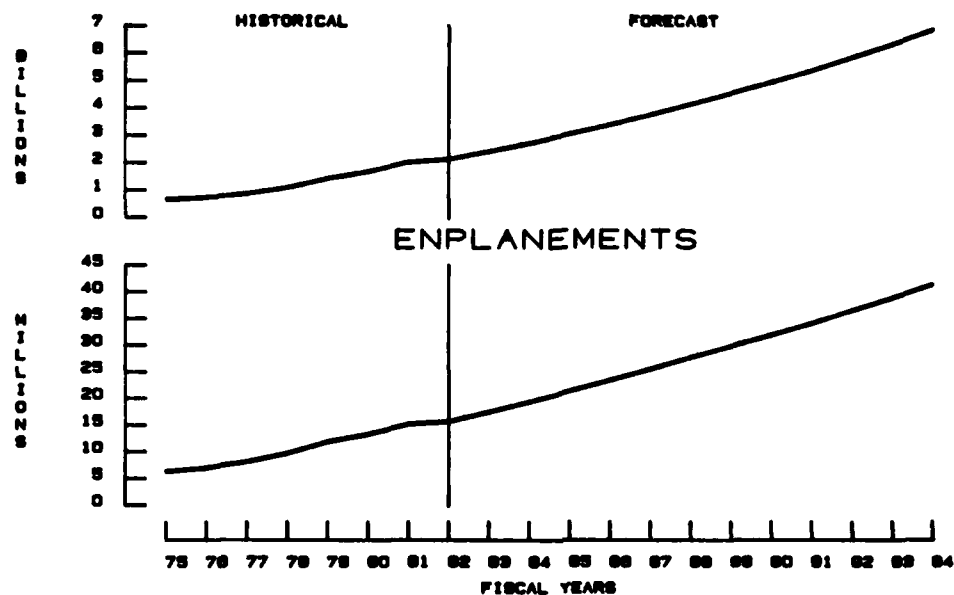
Forecast Assumptions

It is expected that commuter carries will continue to benefit from the larger air carriers' route rationalization policies over the next several years. It is also expected that the average number of seats per aircraft, the number of city-pairs served and the average stage length will increase over the forecast period. However, it is assumed that the commuters will continue to serve primarily those markets under 200 miles where they are now concentrated. Growth achieved through replacement of air carrier service will cease to be a major factor by the mid-80's. After that time, growth for the industry is expected to come from increasing demand placed on a stable, mature commuter airline industry.

Forecasts

After a brief slowdown in the demand for commuter service in 1982, the forecast shows that the strong growth in commuter activity relative to other segments of the aviation industry will resume in 1983. The forecast anticipates higher growth rate in the early years of the forecast period and a gradual decline in the magnitude of that growth as 1994 is approached. By 1983, the commuters are forecast to enplane 17.6 million passengers, an 11.4 percent increase over 1982 levels. Revenue passenger miles are forecast to be 13.2 percent above 1982 levels, or 2.4 billion passenger miles. Passenger enplanements are anticipated to grow 10.8 percent in 1984 and 10.3 percent in 1985, while revenue passenger miles are expected to grow 12.4 percent in 1984 and 12.1 percent in 1985. However, these rates of growth are not expected to be maintained over the entire forecast period as the commuter industry matures. Thus, the expected average growth rate between 1982 and 1994 is 8.4 percent for enplanements and 10.2 percent for passenger miles. This forecast implies that enplanements will more than double their 1982 level during the forecast period to 41.5 million enplanements in 1994. Revenue passenger miles will more than triple their 1982 level to 6.9 billion in 1994.

U. S. COMMUTER AIRLINES SCHEDULED PASSENGER TRAFFIC RPM'S



SOURCE: 1975-82 CIVIL AERONAUTICS BOARD
1983-84 FAA FORECASTS

FAA WORKLOAD FORECASTS

The FAA provides the aviation community with three operational services: air traffic control at selected airports, traffic surveillance and aircraft separation by Air Route Traffic Control Centers, and flight planning and pilot briefings at the Flight Service Stations. All four categories of aviation—general aviation, air carrier, commuter and military—employ these services to enhance aviation traffic safety.

Multiple indicators are used to describe the total FAA operational workload. The four categories of system users differ in the demands they impose on the air traffic system. Consequently, no single measure typifies past trends and future demand for these FAA services. There have been, and will continue to be, different socioeconomic forces driving the growth of each of the system users.

Tower Activity

Aviation activity at FAA towered airports, which declined by almost 11 percent between 1979 and 1981, declined further by 17.9 percent in 1982. The 1982 decline is due in part to the economy and in part to the impact of the Air Traffic Controller's job action. General aviation led the decline as operations fell 23.3 percent below 1981 levels. Only commuter operations, the fastest growing category over the past several years, showed an increase in 1982, up 4.1 percent over 1981 levels.

Notwithstanding the capacity constraints, total operations at FAA towered airports had been expected to decline in 1982. General aviation local and itinerant operations showed declines of 25.8 percent and 21.6 percent, respectively. Air carrier operations declined by only 5.3 percent, reflecting the ability of the air carriers to reschedule their operations at less constrained airports. Military use of FAA facilities, which had held constant over the past several years, declined 8.0 percent to 2.3 million operations in 1982.

Instrument operations handled at FAA towers had, until 1981, shown uninterrupted growth over the past decade. However, due to the recession and capacity constraints placed on the system, instrument operations registered their second straight year of decline in 1982, declining by 15.1 percent to 31.6 million operations. General aviation and air carriers declined by 24.9 percent and 6.9 percent, respectively. Military operations declined by 7.7 percent while commuter operations held constant at 4.6 million.

Center Traffic

In the four years between 1976 and 1980, the number of aircraft flying under instrument rules handled by Air Traffic Control Centers' personnel increased dramatically from 23.9 to 30.1 million, or 6.2 million additional aircraft handled in 1980. The growth for the period 1970 to 1976 was just 2.3 million. As was the case with instrument operations at FAA towers, this increase is attributed to the growth of the commuter industry as well as the increasing

sophistication of general aviation pilots and aircraft. However, despite continued growth by commuters, the total number of aircraft handled by the Centers has declined 7.6 percent since 1980, 5.1 percent in 1982 alone. The 1982 decline resulted largely from a 15.7 percent decline in the number of general aviation aircraft handled. The number of air carrier and military aircraft handled declined 1.6 percent and 8.5 percent, respectively. The number of commuter aircraft handled increased by 13.8 percent.

Flight Service Station Activity

User demands on Flight Service Stations began a decline in 1980 which has continued into 1982. In 1982, the total number of pilot briefings, flight plans originated and aircraft contacted declined 3.0 percent from 1980 levels but only 0.3 percent from 1981 levels. The total number of flight services rendered at Flight Service Stations in 1982 was 62.4 million.

Forecast Assumptions

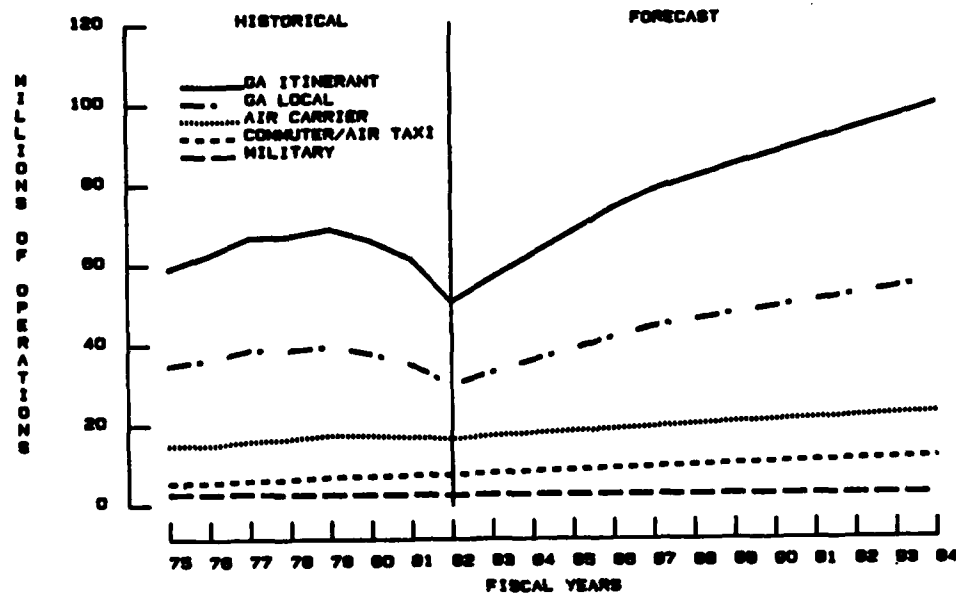
Growth in FAA workload measures is a function of demand imposed on the National Airspace System plus inclusion of aviation activity at locations previously not provided FAA services. Thus, the number of aircraft operations at FAA towered airports in 1994 will consist of traffic at current towers plus those airports with newly commissioned towers during the forecast period. The short-term forecast reflects temporary tower closures.

No specific assumptions beyond the changing traffic mix discussed as part of the aviation activity forecasts have been made in developing the Air Route Traffic Control Center forecast.

Forecasts

As the Air Traffic Control System returns to normalcy by 1984, aircraft operations are expected to resume the historical growth rates exhibited during the early to mid-1970's. Aircraft operations at FAA towers are forecast to increase at an average growth rate of 5.8 percent between 1982 and 1994, from 50.6 million to 99.7 million. The mix of traffic is likely to become increasingly more heterogeneous since the general aviation and commuter fleets of smaller aircraft are growing at a faster rate than the air carrier fleet of larger jets. The combined operations of general aviation and commuters will account for over 86.0 percent of total tower operations in 1994, up from 77.6 percent in 1982. Forecasted average annual growth rate by user group over the entire forecast period are: general aviation, 4.9 percent; air carrier, 1.8 percent; commuter, 7.0 percent; and military, 0.7 percent.

AIRCRAFT OPERATIONS AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE*

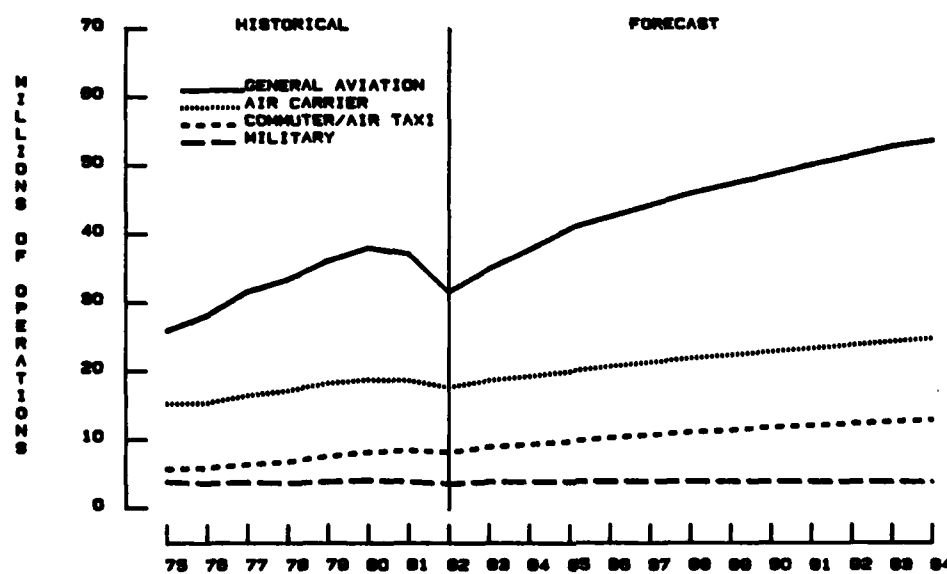


SOURCE: 1975-82 FAA AIR TRAFFIC ACTIVITY REPORT
1983-84 FAA FORECASTS

* INDIVIDUAL USER GROUP FORECASTS ARE ADDITIVE

Instrument operations at FAA towers are also expected to resume the historical growth trend interrupted during the 1981-82 period, growing at an average annual growth rate of 4.5 percent between 1982 and 1994, from 31.6 million to 53.8 million. The mix of instrument operations will also become more heterogeneous as general aviation and commuter operations are forecast to increase at annual rates of 5.8 percent and 6.3 percent, respectively, during the forecast period. By 1994, 70.6 percent of instrument operations will be by general aviation and commuter aircraft, up from 58.5 percent in 1982. Air carrier instrument operations are expected to average 1.9 percent annual growth over the next 12 years, military 0.7 percent.

INSTRUMENT OPERATIONS AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE*

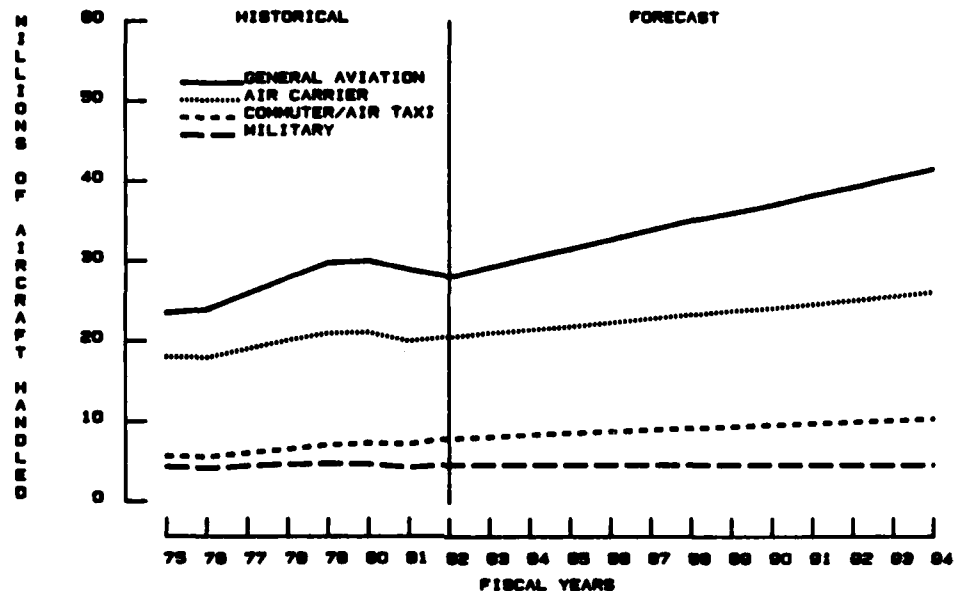


SOURCE: 1975-82 FAA AIR TRAFFIC ACTIVITY REPORT
1983-84 FAA FORECASTS

* INDIVIDUAL USER GROUP FORECASTS ARE ADDITIVE

The workload at Air Route Traffic Control Centers is estimated to grow at an annual rate of 3.4 percent between 1982 and 1994, to 41.6 million aircraft handled. In 1982, 45.7 percent of the traffic handled at the Centers were air carrier flights. By 1994, only 38.0 percent of the Centers' workload is expected to be generated by air carriers, both general aviation and commuters increasing their shares of the total workload. The number of general aviation and commuter aircraft handled are forecast to increase at average annual growth rates of 4.8 percent and 6.2 percent, respectively, between 1982 and 1984. Air carrier and military annual growth will average 1.8 percent and 0.6 percent, respectively, over the same time period.

IFR AIRCRAFT HANDLED AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS*



Total services rendered at Flight Service Stations are forecast to increase 53.9 percent between 1982 and 1984, an average annual growth rate of 3.7 percent.

Chapter III

Alternative Forecasts

CHAPTER III

ALTERNATIVE FORECASTS

The view into the future is always uncertain. Events now unknown will occur and upset the best calculations. Forecasting techniques employing historical relationships and accounting for expected events provide a rational and controlled basis for prediction of future trends. The consensus forecasts presented in the previous chapter represent that outcome.

Two alternative forecasts of aviation activity and FAA workload have been prepared based on different sets of economic and event scenarios. The intent of these scenarios is not to forecast what is expected to happen, but rather to reflect what could happen to aviation if the driving economic and societal events should change. The economic and societal assumptions underlying these scenarios--video conferencing, fuel availability, vertical takeoff and landing service, airport groundside congestion, general aviation taxes, and instrument pilot population growth--were assessed in developing the alternative scenarios. The formal processes of trend impact analysis and cross impact analysis were employed, resulting in either increases or decreases in the forecasts generated with the alternative economic parameters.

Forecast users are encouraged to incorporate these alternative forecasts as an element in their long range planning activities. The forecasts are national in scope. The trends and events discussed here are intended as examples of what might happen, not necessarily what is expected to happen, if: (1) rapid economic expansion were to occur or, (2) if recovery from the current recession is significantly delayed.* Thus, formal or informal scenarios may be developed in support of specific capital projects using these alternative scenarios as a starting point.

The tables on the following pages provide a summary of the two scenarios in comparison to the consensus forecasts for the year of 1994. The scenarios cover the entire 12 year period. Thus, the reported values for the economic, aviation activity and FAA workload measures represent the end states if the scenarios were to transpire.

*A detailed description of these two scenarios is contained in the Federal Aviation Administration publication FAA-AVP-80-8, FAA Aviation Forecast Fiscal Years 1981-1992, September 1980.

COMPARISON OF ALTERNATIVE SCENARIO FORECASTS
ECONOMIC VARIABLES
FY 1994

Economic Variable	Economic Expansion	Consensus Forecast	Stagflation
GNP (billions of 72\$	2,441.2	2,121.1-2,172.8	1,933.0
CPI (1967 = 100)	713.1	546.2-619.6	635.3
Oil & Gas Deflator (1972 = 100)	1,435.4	915.9-1,025.4	1,061.3

COMPARISON OF ALTERNATIVE SCENARIO FORECASTS
AVIATION ACTIVITY
FY 1994

Aviation Activity Measure	Economic Expansion	Consensus Forecast	Stagflation
Scheduled Domestic Passenger Traffic			
Revenue Passenger Miles (billions)	463.8	375.9	347.2
Revenue Passenger Enplanements (millions)	610.5	471.1	457.0
Fleet Size			
Air Carrier	4195	3120	2340
General Aviation (thousands)	376.8	315.2	280.1
Hours Flown (millions)			
Air Carrier	11.5	8.3	6.4
General Aviation	80.5	66.3	57.1

COMPARISON OF ALTERNATIVE SCENARIO FORECASTS
FAA WORKLOAD
FY 1994

Aviation Activity Measure	Economic Expansion	Consensus Forecast	Stagflation
Tower Operations (millions)			
Total	127.7	99.7	57.3
Itinerant	88.4	65.7	46.4
Air Carrier	17.5	11.2	8.9
Air Taxi and Commuter	12.7	9.1	6.7
General Aviation	56.9	44.2	29.6
Military	1.3	1.2	1.2
Local	39.3	34.0	10.9
General Aviation	38.0	32.7	9.6
Military	1.3	1.3	1.3
Instrument Operations (millions)			
Total	85.9	53.8	44.9
Air Carrier	17.6	11.9	9.4
Air Taxi and Commuter	12.6	9.1	6.6
General Aviation	51.4	28.9	24.6
Military	4.3	3.9	4.3
IFR Aircraft Handled (millions)			
Total Handled	64.2	41.6	34.8
Air Carrier Handled	25.6	15.8	13.0
Air Taxi Handled	8.4	5.8	4.4
General Aviation Handled	25.4	15.4	12.7
Military Handled	4.8	4.6	4.7
Flight Services (millions)			
Total	135.8	96.0	76.8
Pilot Briefs	42.1	28.7	22.4
Flight Plans Originated	19.7	14.3	12.3
Aircraft Contacted	12.2	10.0	7.4

Chapter IV

Year-by-Year Data for FAA Aviation Forecasts: Fiscal Years 1983-1994

CHAPTER IV

YEAR-BY-YEAR DATA FOR FAA AVIATION FORECASTS, FISCAL YEARS 1983-1994

Chapter IV provides the detailed data for the National Aviation and FAA workload series forecasted by the FAA Office of Aviation Policy and Plans. The addition of newly certificated carriers reporting to the CAB since deregulation and the reporting of San Juan and Virgin Island traffic as domestic beginning January 1, 1981, should be noted.

Carrier Group1/	Reported Traffic2/ Domestic Int'l	Traffic Included in Computer Total3/	Date of Last Reported Traffic4/
Carrier Group1/	Reported Traffic2/ Domestic Int'l	Traffic Included in Computer Total3/	Date of Last Reported Traffic4/

Line	City	Carrier	Class	Frequency	Remarks
1.	Ashtabula (NC)	NR	7-79	5-81	
2.	AirCal (OC)	NR	1-79		
3.	Air Florida (OM)	NR	1-79	7-80	
4.	Air Midwest (OV)	LR	X		
5.	Air Nevada (UN)	NR	4-81		
6.	Air New England (NR)	LR	X	10-81*	
7.	Air North (NO)	NR	6-80		
8.	Air North/Northern (NG)	NR	3-81		
9.	Air Wisconsin (WH)	LR	7-79		
10.	Alaska (AS)	NR	X		
11.	Albion (TB)	NR	X		
12.	AlcAir (AK)	LR	1-79	10/82*	
13.	American (AA)	NR	X	7/81*	
14.	Apolla (IN)	NR	5-79		
15.	Aspen (AP)	LR	X		
16.	Boat (IN)	LR	7-82		
17.	Big Sky (GO)	NR	6-79		
18.	Brantford (BR)	NR	X		
19.	Brett (NR)	LR	1-81	5-82*	
20.	Capital (CL)	NR	7-80	8-81	
21.	Cascade (CE)	LR	4-80		
22.	Cochise (NP)	NR	1-79	12-81*	
23.	Columbia (CB)	NR	9-79	3-80*	
24.	Colgan (CL)	NR	4-81		
25.	Continental (CO)	NR	X		
26.	Delta (DL)	NR	X		
27.	Eastern (EA)	NR	X		
28.	Empire (ER)	NR	10-79		
29.	Flying Tiger/	NR			
30.	Frontier (FL)	NR	X	3-82	
31.	Golden Gate (GG)	LR	5-80		
32.	Golden West (GW)	LR	2-79		
33.	Great American (GA)	NR	10-80		
34.	Guy-American (GU)	NR	X	8-81	
35.	Hemillon (HA)	NR	X		
36.	Imperial (II)	NR	1-80		
37.	Jet America (JA)	NR	1-82		
38.	Kodiak (KO)	NR	X	5-81	
39.	L.A.B. (JP)	NR	1-79		
40.	Mid-South (VL)	NR	1-79	7-80	
41.	Midstate (IU)	NR	X		
42.	Midway (ML)	LR	4-81		
43.	Mississippi Valley (MV)	LR	X	10-81*	
44.	Musx (XY)	NR	6-80		
45.	Muse (MA)	NR	3-81		
46.	Newair (NB)	NR	7-79		
47.	New York Air (NY)	LR	7-79		
48.	Northeastern (NS)	LR	X		
49.	Northwest (NW)	NR	1-79	10/82*	
50.	Ozark (OZ)	NR	X	7/81*	
51.	Pacific Express (PB)	LR	5-79		
52.	Pacific Southwest (PS)	NR	X		
53.	Pan American (PA)	NR	X		
54.	Peninsula (NS)	NR	1-82		
55.	People Express (PE)	LR	X	5-82*	
56.	Piedmont (PI)	NR	X	8-81	
57.	Reeve (RV)	LR	7-80		
58.	Republic (RC)	NR	X		
59.	Rocky Mountain (JC)	LR	1-79	12-81*	
60.	Sea Air/motive (SJ)	NR	X	3-80*	
61.	Sky West (QC)	NR	X		
62.	Southeast (SE)	NR	X		
63.	Southwest (SW)	NR	X		
64.	Swift Aire (WT)	LR	X		
65.	Texas International (TI)	NR	X		
66.	Transamerica (TV)	NR	X		
67.	Trans World (TW)	NR	X	3-82	
68.	United (UA)	NR	X		
69.	USAir (AL)	NR	X		
70.	Western (WA)	NR	X	7-81*	
71.	Western Yukon (WY)	NR	X	5-81	
72.	Wien (WC)	NR	X		
73.	World (WO)	NR	X	8-81	
74.	Wright (PW)	NR	X		

- 1/ Nationals; L-Large Regionals; M-Medium Regionals
- 2/ Reported traffic designated by X in appropriate box. Date of first reported traffic is indicated for those carriers certified for scheduled air service since passage of the Airline Deregulation Act of 1978.
- 3/ Former commuter carriers holding Section 401 certificated. Traffic data duplicated in Tables 1 and 4.
- 4/ Date of last reported traffic is indicated. Carriers that have discontinued scheduled passenger service indicated by *.

TABLE 1

UNITED STATES CERTIFICATED ROUTE AIR CARRIER
SCHEDULED PASSENGER TRAFFIC(1)

Fiscal Year	Revenue Passenger Enplanements (millions)			Revenue Passenger Miles (billions)		
	Total	Domestic	International	Total	Domestic	International
Historical*						
1978	266.5	246.5	20.0	218.9	176.8	42.1
1979	307.0	283.4	23.6	255.4	203.7	51.7
1980	302.3	278.2	24.1	257.4	203.2	54.2
1981(2)	285.5	264.3	21.2	248.2	197.9	50.3
1982	292.3	272.6	19.7	256.8	207.5	49.3
Forecast						
1983	305.0	284.2	20.8	269.4	217.4	52.0
1984	326.4	304.3	22.1	289.1	233.7	55.4
1985	345.8	322.4	23.4	307.3	248.6	58.7
1986	360.1	335.8	24.3	321.0	259.9	61.1
1987	378.0	352.5	25.5	338.0	273.9	64.1
1988	397.3	370.4	26.9	356.3	288.9	67.4
1989	414.9	386.7	28.2	373.3	302.8	70.5
1990	430.0	400.6	29.4	388.5	314.9	73.6
1991	447.7	416.9	30.8	406.2	329.0	77.2
1992	466.8	434.5	32.3	425.1	344.1	81.0
1993	485.6	451.9	33.7	444.0	359.3	84.7
1994	506.5	471.1	35.4	464.8	375.9	88.9

*Source: CAB Air Carrier Traffic Statistics.

(1) Includes passenger traffic reported by those air carriers listed on preceding page.

(2) San Juan and Virgin Islands traffic reported as domestic beginning January 1, 1981.

TABLE 2

TOTAL LARGE JET AIRCRAFT IN
U.S. COMMERCIAL AIRLINE SERVICE
BY AIRCRAFT TYPE

As of January 1	Total	Narrow Body			Wide Body		
		2 Engine	3 Engine	4 Engine	2 Engine	3 Engine	4 Engine
Historical*							
1978	2,168	553	865	436	2	204	108
1979	2,237	576	931	394	6	215	115
1980	2,394	615	1,029	380	12	227	131
1981	2,475	663	1,097	297	19	255	144
1982	2,483	730	1,096	218	25	267	147
Forecast							
1983 ^{1/}	2,505	777	1,058	202	43	280	145
1984	2,537	828	1,018	181	80	280	150
1985	2,498	856	947	162	101	282	150
1986	2,524	933	872	127	156	284	152
1987	2,557	1,004	801	95	213	285	159
1988	2,612	1,073	731	86	269	286	167
1989	2,696	1,136	682	86	332	286	174
1990	2,783	1,196	644	86	390	286	181
1991	2,866	1,255	604	86	447	286	188
1992	2,961	1,326	562	86	504	286	197
1993	3,053	1,403	519	86	552	286	207
1994	3,120	1,460	489	80	590	286	215

*Source: FAA Aircraft Utilization and Propulsion Reliability Report
1/ 1983 totals do not include Braniff and Altair fleets

TABLE 3

TOTAL AIRBORNE HOURS
U.S. COMMERCIAL AIRLINE LARGE JET AIRCRAFT
BY AIRCRAFT TYPE
(millions)

Fiscal Year	Total	Narrow Body			Wide Body		
		2 Engine	3 Engine	4 Engine	2 Engine	3 Engine	4 Engine
Historical*							
1978	5.91	1.40	2.35	1.12	.01	.62	.41
1979	6.39	1.56	2.71	.99	.02	.64	.47
1980	6.72	1.59	3.02	.79	.04	.75	.53
1981	6.25	1.68	2.80	.47	.06	.74	.50
1982	6.30	1.87	2.68	.35	.07	.80	.53
Forecast							
1983	6.36	1.95	2.56	.35	.13	.84	.53
1984	6.41	2.03	2.42	.33	.21	.85	.57
1985	6.43	2.15	2.28	.30	.27	.86	.57
1986	6.49	2.32	2.08	.24	.41	.86	.58
1987	6.63	2.51	1.91	.18	.56	.87	.60
1988	6.81	2.69	1.74	.17	.71	.87	.63
1989	7.03	2.86	1.62	.17	.87	.85	.66
1990	7.29	3.02	1.53	.17	1.03	.85	.69
1991	7.54	3.21	1.44	.17	1.17	.84	.71
1992	7.80	3.39	1.34	.17	1.32	.83	.75
1993	8.06	3.60	1.24	.17	1.45	.82	.78
1994	8.25	3.75	1.16	.16	1.55	.82	.81

*Source: FAA Aircraft Utilization and Propulsion Reliability Report.

TABLE 4

COMMUTER AIRLINES PASSENGER TRAFFIC (1)
(millions)

Fiscal Year	Revenue Passenger Enplanements			Revenue Passenger Miles		
	Total	48 States (2)	Hawaii/ Puerto Rico/ Virgin Island	Total	48 States (2)	Hawaii/ Puerto Rico/ Virgin Island
Historical*						
1978	9.8	8.3	1.5	1,108.7	1,005.6	103.1
1979	12.0	10.2	1.8	1,444.8	1,316.4	128.4
1980	13.4	11.9	1.5	1,693.2	1,585.4	107.8
1981	15.3	13.5	1.8	2,037.7	1,900.9	136.8
1982E(3)	15.8	13.6	2.2	2,146.7	1,958.0	188.7
Forecast						
1983	17.6	15.0	2.6	2,429.3	2,220.0	209.3
1984	19.5	16.5	3.0	2,730.0	2,488.5	241.5
1985	21.5	18.1	3.4	3,061.1	2,787.4	273.7
1986	23.5	19.7	3.8	3,398.8	3,092.9	305.9
1987	25.6	21.4	4.2	3,762.1	3,424.0	338.1
1988	27.8	23.2	4.6	4,151.9	3,781.6	370.3
1989	29.9	25.0	4.9	4,544.5	4,150.0	394.5
1990	32.0	26.8	5.2	4,947.8	4,529.2	418.6
1991	34.2	28.7	5.5	5,379.2	4,936.4	442.8
1992	36.6	30.8	5.8	5,856.9	5,390.0	466.9
1993	39.0	32.9	6.1	6,347.3	5,856.2	491.1
1994	41.5	35.1	6.4	6,868.3	6,353.1	515.2

E - Estimate *Source: Civil Aeronautics Board

(1) Includes commuter carriers holding Section 401 certificates and not reporting on CAB Form 298-C. See list on page 45. (Traffic duplicated in Table 1).

(2) Forecasts exclude Alaska Commuter Traffic.

(3) Fiscal year 1982 excludes Altair because of conversion to all jet fleet.

TABLE 5

ESTIMATED ACTIVE GENERAL AVIATION
AIRCRAFT BY TYPE OF AIRCRAFT
(thousands)

As of January 1 Historical*	Fixed Wing					Rotorcraft		
	Total	Piston		Turboprop	Turbojet	Piston	Turbine	Balloons Dirigibles Gliders
		Single Engine	Multi- Engine					
1978	184.3	149.3	21.5	2.9	2.3	2.7	2.1	3.6
1979	198.8	160.7	23.2	3.1	2.5	2.8	2.5	4.0
1980	210.3	168.4	25.1	3.5	2.7	3.1	2.7	4.8
1981	211.0	168.4	24.6	4.1	3.0	2.8	3.2	4.9
1982	213.2	167.9	25.5	4.7	3.2	3.3	3.7	5.0
Forecast								
1983	215.0	168.1	26.1	5.0	3.3	3.4	3.9	5.2
1984	217.1	168.5	26.9	5.4	3.4	3.5	4.1	5.3
1985	221.9	171.1	28.0	5.9	3.5	3.6	4.3	5.5
1986	229.1	175.6	29.2	6.4	3.8	3.7	4.7	5.7
1987	237.3	181.3	30.4	6.9	4.0	3.8	5.0	5.9
1988	246.5	187.5	31.8	7.5	4.2	3.9	5.3	6.3
1989	257.1	194.9	33.2	8.0	4.5	4.1	5.6	6.8
1990	268.7	203.4	34.7	8.5	4.8	4.3	5.8	7.2
1991	280.2	211.4	36.3	9.0	5.1	4.6	6.1	7.7
1992	291.7	219.9	37.5	9.4	5.4	4.8	6.5	8.2
1993	303.5	228.4	38.8	9.9	5.8	5.0	6.9	8.7
1994	315.2	236.8	40.1	10.4	6.2	5.2	7.3	9.2

*Source: FAA Statistical Handbook of Aviation

Detail may not add to total because of independent rounding.

An active aircraft must have a current registration and it must have been flown at least 1 hour during the previous calendar year.

TABLE 6
ESTIMATED ACTIVE GENERAL AVIATION
AIRCRAFT BY FAA REGION
(thousands)

As of January 1	FAA Region									
	Total	ANE	AFA	ASO	AGL	ACE	ASW	AWP	ANM	AAL
Historical*										
1978	184.3	6.6	21.7	26.9	36.0	13.6	25.8	29.1	19.7	4.9
1979	198.8	7.5	23.7	29.5	37.5	13.8	26.7	31.3	23.0	5.8
1980	210.3	7.4	22.9	29.7	39.7	14.1	30.9	35.3	24.4	5.9
1981	211.0	7.4	23.0	29.8	39.9	14.1	31.0	35.4	24.5	5.9
1982**	213.2	7.0	21.2	32.1	40.0	14.0	32.2	36.7	23.8	6.2
Forecast										
1983	215.0	7.0	21.3	32.4	40.3	14.1	32.5	37.0	24.1	6.3
1984	217.1	7.1	21.7	32.7	40.7	14.2	32.8	37.4	24.2	6.3
1985	221.9	7.2	22.2	33.4	41.6	14.5	33.5	38.2	24.8	6.5
1986	229.1	7.5	22.8	34.5	43.0	15.0	34.6	39.4	25.6	6.7
1987	237.3	7.7	23.7	35.8	44.5	15.5	35.9	40.8	26.5	6.9
1988	246.5	8.0	24.6	37.1	46.3	16.1	37.3	42.4	27.5	7.2
1989	257.1	8.4	25.6	38.7	48.2	16.8	38.9	44.3	28.7	7.5
1990	268.7	8.8	26.8	40.5	50.4	17.6	40.6	46.2	30.0	7.8
1991	280.2	9.2	27.8	42.2	52.5	18.4	42.4	48.2	31.3	8.2
1992	291.7	9.5	29.0	44.0	54.7	19.1	44.1	50.2	32.6	8.5
1993	303.5	9.9	30.3	45.7	56.9	19.9	45.9	52.2	33.9	8.8
1994	315.2	10.3	31.3	47.5	59.1	20.6	47.7	54.3	35.2	9.2

*Source: FAA Statistical Handbook of Aviation

Detail may not add to total because of independent rounding.

**Regional totals were revised based upon their standard errors so that they sum to the national total.

TABLE 7

ESTIMATED HOURS FLOWN IN
GENERAL AVIATION BY TYPE OF AIRCRAFT
(millions)

Fiscal Year	Total	Fixed Wing				Rotorcraft			
		Piston		Turboprop	Turbojet	Piston		Turbine	Balloons Dirigibles Gliders
		Single Engine	Multi- Engine						
Historical*									
1978	38.5	27.0	6.2	1.6	1.2	.8		1.4	.3
1979	42.3	29.7	6.8	1.8	1.2	.9		1.6	.3
1980	41.6	28.8	6.6	2.1	1.3	.8		1.6	.4
1981	41.0	27.9	6.4	2.2	1.4	.9		1.8	.4
1982E	42.6	28.5	6.8	2.4	1.5	1.0		2.0	.4
Forecast									
1983	43.5	28.8	7.1	2.6	1.5	1.0		2.1	.4
1984	44.4	29.1	7.3	2.8	1.6	1.0		2.2	.4
1985	45.8	29.8	7.5	3.0	1.7	1.0		2.4	.4
1986	47.8	30.8	7.8	3.2	1.8	1.1		2.6	.5
1987	49.6	31.8	8.2	3.4	1.9	1.1		2.7	.5
1988	51.8	33.1	8.5	3.7	2.0	1.1		2.9	.5
1989	54.4	34.7	8.9	3.9	2.1	1.2		3.0	.6
1990	56.6	36.0	9.3	4.1	2.2	1.3		3.1	.6
1991	58.9	37.4	9.6	4.3	2.4	1.3		3.3	.6
1992	61.3	38.9	9.9	4.5	2.5	1.4		3.5	.6
1993	63.9	40.4	10.3	4.7	2.7	1.4		3.7	.7
1994	66.3	41.9	10.6	4.9	2.8	1.5		3.9	.7
E - Estimate									

*Source: FAA Statistical Handbook of Aviation

Detail may not add to total because of independent rounding.

TABLE 8

ESTIMATED FUEL CONSUMED BY
GENERAL AVIATION BY TYPE OF AIRCRAFT
(millions of gallons)

Fiscal Year	Total	Fixed Wing				Rotorcraft					
		Piston		Turbojet	Turboprop	Turbojet	Piston	Turbine	Other		
		Single Engine	Multi-Engine								
Historical*											
1978	1,232.4	251.0	211.4	188.3	517.8	12.3	50.6			1.0	
1979	1,322.8	282.2	238.0	207.0	522.0	14.2	58.4			1.0	
1980	1,383.8	273.6	231.0	241.5	565.5	12.6	58.4			1.2	
1981	1,433.3	265.1	224.0	253.0	609.0	14.4	66.6			1.2	
1982E	1,528.5	270.8	238.0	276.0	652.5	16.0	74.0			1.2	
Forecast											
1983	1,568.5	273.6	248.5	299.0	652.5	16.0	77.7			1.2	
1984	1,648.6	276.5	255.5	322.0	696.0	16.0	81.4			1.2	
1985	1,736.1	283.1	262.5	345.0	739.5	16.0	88.8			1.2	
1986	1,831.9	292.6	273.0	368.0	783.0	17.6	96.2			1.5	
1987	1,925.6	302.1	287.0	391.0	826.5	17.6	99.9			1.5	
1988	2,033.9	314.5	297.5	425.5	870.0	17.6	107.3			1.5	
1989	2,135.2	329.7	311.5	448.5	913.5	19.2	111.0			1.8	
1990	2,233.3	342.0	325.5	471.5	957.0	20.8	114.7			1.8	
1991	2,374.5	355.3	336.0	494.5	1,044.0	20.8	122.1			1.8	
1992	2,474.8	369.6	346.5	517.5	1,087.5	22.4	129.5			1.8	
1993	2,620.7	383.8	360.5	540.5	1,174.5	22.4	136.9			2.1	
1994	2,721.0	398.1	371.0	563.5	1,218.0	24.0	144.3			2.1	

E - Estimate

*Source: FAA APO Estimates

TABLE 9

ESTIMATED FUEL CONSUMED BY
UNITED STATES DOMESTIC CIVIL AVIATION
(millions of gallons)

Fiscal Year	Total Jet Fuel and Aviation		Jet Fuel		General Aviation		Aviation Gasoline		
	Gasoline		Total	Air Carrier			Total	Air Carrier	General Aviation
Historical*									
1978	9,919		9,426	8,669		757	493	17	476
1979	10,612		10,062	9,275		787	550	15	535
1980	10,690		10,161	9,296		865	529	13	516
1981	10,461		9,923	8,984		939	538	11	527
1982E	9,849		9,314	8,311		1,003	535	9	526
Forecast									
1983	10,195		9,649	8,620		1,029	546	7	539
1984	10,604		10,049	8,950		1,099	555	6	549
1985	10,871		10,303	9,130		1,173	568	5	563
1986	11,077		10,487	9,240		1,247	590	5	585
1987	11,349		10,737	9,420		1,317	612	4	608
1988	11,707		11,073	9,670		1,403	634	3	631
1989	12,067		11,403	9,930		1,473	664	2	662
1990	12,365		11,673	10,130		1,543	692	2	690
1991	12,807		12,091	10,430		1,661	716	2	714
1992	13,217		12,475	10,740		1,735	742	2	740
1993	13,673		12,902	11,050		1,852	771	2	769
1994	14,173		13,376	11,450		1,926	797	2	795
E - Estimate									

*Source: FAA APO Estimates

Domestic civil aviation is defined for purposes of the table to include all civil aircraft flights which originate and terminate within the 50 states. Estimates of fuel consumed by airframe and aircraft engine manufacturers, whether for flight testing, or ground testing are not shown here because they are not available for the domestic industry as a whole and estimates cannot be developed with any assurance of accuracy. Estimates of fuel consumed by the supplemental, contract and intrastate carriers are included in the "Air Carrier" columns. It should also be noted that general aviation fuel consumption is not reported and historical series are estimates.

TABLE 10

TOTAL ITINERANT AND LOCAL AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	Itinerant	Local	Number of Towers
Historical*				
1978	67.2	43.6	23.6	428
1979	69.0	45.4	23.6	431
1980	66.2	44.3	21.9	432
1981	61.6	42.0	19.5	433
1982	50.6	35.9	14.7	375
Forecast				
1983	56.4	39.4	17.0	390
1984	62.4	42.9	19.5	403
1985	68.1	46.3	21.8	433
1986	73.8	49.6	24.2	435
1987	78.4	52.1	26.3	437
1988	81.5	54.1	27.4	439
1989	84.6	56.1	28.5	441
1990	87.6	58.0	29.6	443
1991	90.6	59.9	30.7	445
1992	93.6	61.8	31.8	447
1993	96.6	63.7	32.9	449
1994	99.7	65.7	34.0	451

*Source: FAA Air Traffic Activity.

1982-1984 operations reflect the temporary closures of FAA Air Traffic Control Towers. Detail may not add to total because of independent rounding.

An aircraft operation is defined as an aircraft arrival at or a departure from an airport with FAA traffic control service. A local operation is performed by an aircraft that: operates in the local traffic pattern or within sight of the tower; is known to be departing for or arriving from flight in local practice areas; or executes simulated instrument approaches or low passes at the airport. All aircraft arrivals and departures other than local (as defined above) are classified as itinerant operations.

TABLE 11
ITINERANT AIRCRAFT OPERATIONS AT AIRPORTS WITH
FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	Air Carrier	Air Taxi/ Commuter	General Aviation	Military
Historical*					
1978	43.6	10.1	3.8	28.5	1.2
1979	45.4	10.4	4.4	29.4	1.2
1980	44.3	10.1	4.6	28.3	1.2
1981	42.0	9.5	4.9	26.4	1.2
1982	35.9	9.0	5.1	20.7	1.1
Forecast					
1983	39.4	9.3	5.4	23.5	1.2
1984	42.9	9.5	5.8	26.4	1.2
1985	46.3	9.7	6.1	29.3	1.2
1986	49.6	9.8	6.5	32.1	1.2
1987	52.1	10.0	6.8	34.1	1.2
1988	54.1	10.2	7.2	35.5	1.2
1989	56.1	10.4	7.5	37.0	1.2
1990	58.0	10.5	7.9	38.4	1.2
1991	59.9	10.6	8.2	39.9	1.2
1992	61.8	10.8	8.5	41.3	1.2
1993	63.7	11.0	8.8	42.7	1.2
1994	65.7	11.2	9.1	44.2	1.2

*Source: FAA Air Traffic Activity.
Detail may not add to total because of independent rounding.
See Table 10 for definition of itinerant operations.

TABLE 12

LOCAL AIRCRAFT OPERATIONS AT AIRPORTS
WITH FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	General Aviation	Military
Historical*			
1978	23.6	22.3	1.3
1979	23.6	22.3	1.3
1980	21.9	20.6	1.3
1981	19.5	18.2	1.3
1982	14.7	13.5	1.2
Forecast			
1983	17.1	15.8	1.3
1984	19.5	18.2	1.3
1985	21.8	20.5	1.3
1986	24.2	22.9	1.3
1987	26.3	25.0	1.3
1988	27.4	26.1	1.3
1989	28.5	27.2	1.3
1990	29.6	28.3	1.3
1991	30.7	29.4	1.3
1992	31.8	30.5	1.3
1993	32.9	31.6	1.3
1994	34.0	32.7	1.3

*Source: FAA Air Traffic Activity

Detail may not add to total because of independent rounding.
See Table 10 for definition of local operations.

TABLE 13
INSTRUMENT OPERATIONS AT AIRPORTS WITH
FAA TRAFFIC CONTROL SERVICE
(millions)

Fiscal Year	Total	Air Taxi/			General Aviation	Military
		Air Carrier	Commuter			
Historical*						
1978	33.5 (7.8)	10.4	3.1		16.3	3.7
1979	36.2 (8.6)	10.7	3.7		17.9	3.9
1980	38.2 (10.2)	10.6	4.1		19.3	4.1
1981	37.2 (9.6)	10.2	4.6		18.5	3.9
1982	31.6 (6.5)	9.5	4.6		13.9	3.6
Forecast						
1983	35.0 (8.1)	9.7	5.1		16.3	3.9
1984	37.8 (9.6)	9.9	5.5		18.5	3.9
1985	40.9 (11.2)	10.2	5.9		20.9	3.9
1986	42.6 (11.5)	10.4	6.4		21.9	3.9
1987	44.3 (11.8)	10.6	6.8		23.0	3.9
1988	46.0 (12.2)	10.8	7.2		24.1	3.9
1989	47.4 (12.3)	11.0	7.5		25.0	3.9
1990	48.7 (12.4)	11.1	7.9		25.8	3.9
1991	50.2 (12.6)	11.3	8.2		26.8	3.9
1992	51.5 (12.7)	11.5	8.5		27.6	3.9
1993	52.9 (12.8)	11.7	8.8		28.5	3.9
1994	53.8 (12.8)	11.9	9.1		28.9	3.9

*Source: FAA Air Traffic Activity.

An instrument operation is defined as the handling by an FAA terminal traffic control facility of the arrival, departure, or overflight at an airport of an aircraft on an IFR flight plan or the provision of IFR separation to other aircraft by an FAA terminal traffic control facility. Non-IFR instrument counts at Terminal Control Area (TCA) facilities and Stage III of expanded area radar service are included in the totals and noted in parenthesis as an information item (see Table 14).

The data include instrument operations at FAA operated military radar approach control facilities. Detail may not add to total because of independent rounding.

TABLE 14
NON-IFR INSTRUMENT OPERATIONS
(millions)

Fiscal Year	Total	Terminal Control Areas	Expanded Radar Service Area	
			Stage III	
Historical*				
1978	7.8	2.1	5.7	
1979	8.6	2.4	6.2	
1980	10.2	2.7	7.6	
1981	9.6	2.8	6.8	
1982	6.5	1.9	4.6	
Forecast				
1983	8.1	2.2	5.9	
1984	9.6	2.4	7.2	
1985	11.2	2.7	8.5	
1986	11.5	2.9	8.6	
1987	11.8	3.2	8.6	
1988	12.2	3.6	8.6	
1989	12.3	3.6	8.7	
1990	12.4	3.7	8.7	
1991	12.6	3.7	8.9	
1992	12.7	3.8	8.9	
1993	12.8	3.9	8.9	
1994	12.8	3.9	8.9	

*Source: FAA Air Traffic Activity.
1982-1983 operations reflect the temporary termination of Stage III Service at 34 locations.

TABLE 15

IFR AIRCRAFT HANDLED
FAA AIR ROUTE TRAFFIC CONTROL CENTERS
(millions)

Fiscal Year	Total		Aircraft Handled			Aircraft Handled		
	Aircraft Handled	IFR Departures	Overs	Air Carrier	Air Taxi/ Commuter	General Aviation	Military	
Historical*								
1978	28.1	11.0	6.0	13.6	1.9	7.8	4.7	
1979	29.9	11.6	6.6	14.0	2.3	8.8	4.8	
1980	30.1	11.7	6.7	13.9	2.6	8.9	4.7	
1981	29.3	11.4	6.5	12.9	2.9	8.9	4.7	
1982	27.8	10.7	6.4	12.7	3.3	7.5	4.3	
Forecast								
1983	29.3	11.4	6.5	13.0	3.5	8.2	4.6	
1984	30.5	11.9	6.7	13.1	3.8	9.0	4.6	
1985	31.6	12.4	6.8	13.3	4.0	9.7	4.6	
1986	32.8	12.9	7.0	13.6	4.2	10.4	4.6	
1987	34.0	13.4	7.2	13.9	4.4	11.1	4.6	
1988	35.2	13.9	7.4	14.2	4.6	11.8	4.6	
1989	36.1	14.3	7.5	14.5	4.8	12.2	4.6	
1990	37.1	14.7	7.7	14.6	5.0	12.9	4.6	
1991	38.3	15.2	7.9	14.9	5.2	13.6	4.6	
1992	39.3	15.6	8.1	15.2	5.4	14.1	4.6	
1993	40.5	16.1	8.3	15.5	5.6	14.8	4.6	
1994	41.6	16.6	8.4	15.8	5.8	15.4	4.6	

*Source: FAA Air Traffic Activity.

Detail may not add to total because of independent rounding.

The aircraft handled count consists of the number of IFR departures multiplied by two plus the number of overs. This concept recognizes that for each departure there is a landing. An IFR departure is defined as an original IFR flight plan filed either prior to departure or after becoming airborne. An overflight originates outside the ARTCC area and passes through the area without landing.

TABLE 16

IFR DEPARTURES AND OVERS
FAA AIR ROUTE TRAFFIC CONTROL CENTERS
(millions)

Fiscal Year	Air Carrier		Air Taxi/Commuter		General Aviation		Military	
	IFR Departures	Overs	IFR Departures	Overs	IFR Departures	Overs	IFR Departures	Overs
Historical*								
1978	5.0	3.6	.9	0.1	3.4	1.0	1.7	1.3
1979	5.0	3.9	1.1	0.1	3.8	1.2	1.7	1.4
1980	4.9	4.0	1.2	0.1	3.9	1.2	1.6	1.4
1981	4.6	3.8	1.4	0.1	3.9	1.2	1.6	1.4
1982	4.4	3.8	1.6	0.1	3.2	1.2	1.5	1.3
Forecast								
1983	4.6	3.8	1.7	0.1	3.5	1.2	1.6	1.4
1984	4.6	3.9	1.8	0.2	3.9	1.2	1.6	1.4
1985	4.7	3.9	1.9	0.2	4.2	1.3	1.6	1.4
1986	4.8	4.0	2.0	0.2	4.5	1.4	1.6	1.4
1987	4.9	4.1	2.1	0.2	4.8	1.5	1.6	1.4
1988	5.0	4.2	2.2	0.2	5.1	1.6	1.6	1.4
1989	5.1	4.3	2.3	0.2	5.3	1.6	1.6	1.4
1990	5.1	4.4	2.4	0.2	5.6	1.7	1.6	1.4
1991	5.2	4.5	2.5	0.2	5.9	1.8	1.6	1.4
1992	5.3	4.6	2.6	0.2	6.1	1.9	1.6	1.4
1993	5.4	4.7	2.7	0.2	6.4	2.0	1.6	1.4
1994	5.5	4.8	2.8	0.2	6.7	2.0	1.6	1.4

*Source: FAA Air Traffic Activity.

TABLE 17

TOTAL FLIGHT SERVICES, PILOT BRIEFS AND FLIGHT PLANS
ORIGINATED AT FAA FLIGHT SERVICE STATIONS
AND COMBINED STATION/TOWERS
(millions)

Fiscal Year	Total		Flight Plans Originated		
	Flight Services	Pilot Briefs	Total	IFR-DVFR	VFR
Historical*					
1978	64.9	18.3	9.1	6.4	2.7
1979	66.6	18.7	9.5	6.9	2.6
1980	64.3	18.3	9.0	6.6	2.4
1981	62.6	17.7	8.8	6.5	2.3
1982	62.4	17.8	8.5	6.5	2.0
Forecast					
1983	63.8	18.0	9.0	6.9	2.1
1984	66.7	18.9	9.5	7.2	2.3
1985	69.8	19.9	10.0	7.6	2.4
1986	72.8	20.9	10.5	8.0	2.5
1987	75.8	21.9	11.0	8.5	2.5
1988	78.6	22.9	11.4	8.9	2.5
1989	81.4	23.8	11.9	9.4	2.5
1990	84.4	24.8	12.4	9.9	2.5
1991	87.4	25.8	12.9	10.4	2.5
1992	90.4	26.8	13.4	10.9	2.5
1993	93.4	27.8	13.9	11.4	2.5
1994	96.0	28.7	14.3	11.8	2.5

*Source: FAA Air Traffic Activity.

Detail may not add to total because of independent rounding.

Total Flight Services is a weighted workload measurement derived by multiplying pilot briefs and flight plans originated by two and adding the number of aircraft contacted. A flight plan may be filed orally or in writing to qualify for inclusion in the activity count. The data forecast in Tables 17 and 18 are based upon the current number of and configuration of the FSS and CS/T. Changes in their number or configuration may necessitate adjustments in the forecasts.

TABLE 18
AIRCRAFT CONTACTED FAA FLIGHT SERVICE STATIONS
AND COMBINED STATION/TOWERS
(millions)

Fiscal Year	Total	IFR-DVFR	VFR	Air Carrier	Air Taxi/ Commuter	General Aviation	Military
Historical*							
1978	10.2	1.9	8.3	.4	.8	8.4	.5
1979	10.2	2.0	8.1	.4	.9	8.4	.4
1980	9.6	2.0	7.7	.4	.9	7.9	.4
1981	9.6	2.0	7.6	.4	.9	7.9	.4
1982	9.7	2.5	7.2	.4	1.2	7.7	.4
Forecast							
1983	9.8	2.5	7.3	.4	1.2	7.8	.4
1984	9.9	2.6	7.3	.4	1.2	7.9	.4
1985	10.0	2.6	7.4	.3	1.2	8.1	.4
1986	10.0	2.6	7.4	.3	1.2	8.1	.4
1987	10.0	2.6	7.4	.3	1.2	8.1	.4
1988	10.0	2.7	7.3	.3	1.2	8.1	.4
1989	10.0	2.7	7.3	.3	1.2	8.1	.4
1990	10.0	2.7	7.3	.3	1.2	8.1	.4
1991	10.0	2.8	7.2	.3	1.2	8.1	.4
1992	10.0	2.8	7.2	.3	1.2	8.1	.4
1993	10.0	2.8	7.2	.3	1.2	8.1	.4
1994	10.0	2.8	7.2	.3	1.2	8.1	.4

*Source: FAA Air Traffic Activity.

Detail may not add to total because of independent rounding.
Aircraft contacted represent a record of the number of aircraft with which FAA facilities (FSS, CS/T) have established radio communications contact. One count is made for each en route, landing or departing aircraft contacted by a facility, regardless of the number of contacts with an individual aircraft. A flight involving contacts with five different facilities, disregarding the number of contacts with each, would be counted as five aircraft contacted.

TABLE 19

ACTIVE PILOTS BY TYPE OF CERTIFICATE
(thousands)

As of January 1	Total	Students	Private	Commercial	Airline			Glider	Other	Instrument Rated (1)
					Transport	Helicopter	Transport			
Historical*										
1978	783.9	203.5	327.4	188.8	50.1	4.8		6.2	3.1	226.3
1979	798.8	204.9	337.6	185.8	55.9	4.9		6.5	3.2	236.3
1980	814.7	210.2	343.3	182.1	63.7	5.2		6.8	3.4	247.1
1981	827.0	199.8	357.5	183.4	69.6	6.0		7.0	3.7	260.5
1982	764.2	179.9	328.6	168.6	70.3	6.5		7.4	3.0	252.5
Forecast										
1983	776.4	182.0	332.4	169.6	74.3	7.0		7.9	3.2	261.1
1984	792.5	187.2	337.4	170.0	78.9	7.4		8.3	3.3	269.9
1985	810.4	193.2	344.4	170.1	82.9	7.7		8.7	3.4	280.8
1986	832.7	202.9	351.9	170.2	86.9	8.1		9.2	3.5	292.0
1987	856.9	211.5	361.9	170.3	91.5	8.4		9.6	3.7	303.7
1988	877.3	216.7	371.5	171.0	95.5	8.7		10.0	3.9	315.8
1989	900.7	224.3	382.3	172.1	98.5	9.0		10.4	4.1	325.3
1990	924.5	230.9	393.3	174.2	101.7	9.3		10.8	4.3	335.0
1991	949.6	237.5	404.4	177.5	104.9	9.6		11.2	4.5	345.1
1992	976.5	244.6	415.8	181.7	108.1	9.9		11.7	4.7	355.4
1993	1,003.9	252.2	426.8	186.7	111.1	10.2		12.0	4.9	369.7
1994	1,031.6	260.0	437.6	192.0	114.1	10.5		12.3	5.1	380.7

*Source: FAA Statistical Handbook of Aviation

Detail may not add to total because of rounding.

(1) Should not be added to other categories in deriving total.

TABLE 20

ACTIVE U.S. MILITARY AIRCRAFT IN
CONTINENTAL UNITED STATES(1)

Fiscal Year	Total	Fixed Wing Aircraft			Helicopter
		Jet	Turboprop	Piston	
Historical*					
1978	18,931	8,898	1,794	1,056	7,183
1979	18,526	8,656	1,859	850	7,161
1980	18,969	8,794	1,869	699	7,607
1981	19,363	9,111	1,943	591	7,718
1982E	20,077	9,575	1,944	521	8,037
Forecast					
1983	20,246	9,583	1,989	472	8,202
1984	20,504	9,670	2,096	423	8,315
1985	20,750	9,718	2,179	346	8,507
1986	20,758	9,797	2,265	197	8,499
1987	21,026	10,081	2,302	158	8,485
1988	21,256	10,300	2,303	147	8,506
1989	21,581	10,670	2,298	143	8,470
1990	21,920	10,993	2,288	146	8,493
1991(2)	21,901	11,011	2,285	146	8,459
1992	21,901	11,011	2,285	146	8,459
1993	21,901	11,011	2,285	146	8,459
1994	21,901	11,011	2,285	146	8,459

E - Estimate *Source: Office of the Secretary of Defense, Department of Defense.

(1) Includes Army, Air Force, Navy and Marine regular service aircraft, as well as Reserve and National Guard aircraft.

(2) Detailed planning information not available beyond 1991. 1992 through 1994 projected at 1991 level.

TABLE 21

ACTIVE U.S. MILITARY AIRCRAFT FLYING
HOURS IN CONTINENTAL UNITED STATES (1)
(Thousands)

Fiscal Year	Total	Fixed Wing Aircraft			Helicopter
		Jet	Turboprop	Piston	
Historical*					
1978	4,837	2,843	595	328	1,071
1979	5,319	2,960	684	398	1,277
1980	5,255	2,904	796	235	1,320
1981	5,850	2,966	840	253	1,791
1982E	6,191	3,347	752	200	1,892
Forecast					
1983	6,348	3,431	795	179	1,943
1984	6,475	3,527	816	163	1,969
1985	6,648	3,624	844	158	2,022
1986	6,865	3,761	819	151	2,134
1987	7,041	3,831	912	151	2,147
1988	7,193	3,955	888	149	2,201
1989	7,270	4,020	892	149	2,209
1990	7,319	4,060	892	149	2,218
1991(2)	7,319	4,060	892	149	2,218
1992	7,319	4,060	892	149	2,218
1993	7,319	4,060	892	149	2,218
1994	7,319	4,060	892	149	2,218

E - Estimate *Source: Office of the Secretary of Defense, Department of Defense
(1) Includes Army, Air Force, Navy and Marine regular aircraft, as well as Reserve and National Guard Aircraft.

(2) Detailed planning information not available beyond 1990. 1991 through 1994 projected at 1990 level.

TABLE 22

ECONOMIC ASSUMPTIONS USED IN FAA FORECASTS

Calendar Year	Gross National Product (Billions 1972\$)				Consumer Price Index (CY 1967=100)				Fuel Price Index CY 1972=100)			
	Chase	DRI	Evans	Wharton	Chase	DRI	Evans	Wharton	Chase	DRI	Evans**	Wharton
Historical												
1978	1,436.9	1,436.9	1,436.9	1,436.9	195.3	195.3	195.3	195.3	181.6	181.6	196.4	181.6
1979	1,483.0	1,483.0	1,483.0	1,483.0	217.7	217.7	217.7	217.7	243.4	243.4	265.8	243.4
1980	1,480.7	1,480.7	1,480.7	1,480.7	247.0	247.0	247.0	247.0	339.4	339.4	369.3	339.4
1981	1,502.6	1,502.6	1,502.6	1,502.6	272.3	272.3	272.3	272.3	376.7	376.7	411.0	376.7
1982	1,477.5	1,479.6	1,476.6	1,480.0	289.3	289.7	289.0	288.6	353.2	353.2	387.3	370.4
Forecast												
1983	1,513.6	1,526.3	1,494.1	1,527.7	304.1	307.2	303.9	304.5	362.2	366.1	396.4	386.3
1984	1,573.9	1,589.5	1,544.2	1,604.3	322.6	326.7	317.9	324.6	389.4	391.0	416.1	429.1
1985	1,626.1	1,646.1	1,604.9	1,663.4	343.3	348.3	333.0	350.0	437.4	426.2	438.2	479.6
1986	1,675.2	1,701.4	1,666.0	1,695.5	363.7	371.2	349.9	375.7	483.2	469.1	466.1	535.1
1987	1,725.7	1,751.3	1,729.6	1,756.6	384.1	394.8	369.4	399.0	532.6	519.8	495.2	582.9
1988	1,778.8	1,813.3	1,791.6	1,814.5	405.4	420.6	391.5	419.9	588.8	574.0	528.2	631.9
1989	1,832.7	1,871.8	1,850.0	1,862.9	427.8	449.0	415.7	441.7	649.4	639.1	564.0	676.2
1990	1,886.6	1,919.2	1,903.9	1,899.0	450.4	480.5	441.1	463.3	714.0	713.3	601.4	724.5
1991	1,943.7	1,972.7	1,958.1	1,966.7	472.4	513.1	467.7	489.1	784.4	785.2	641.2	776.4
1992	2,002.0*	2,026.6	2,013.8	2,020.2	497.9*	546.6	495.4	514.4	862.8*	861.8	683.6	827.8
1993	2,062.1*	2,073.8	2,076.2*	2,080.8*	524.8*	581.8	525.1*	541.1*	949.1*	940.6	729.4*	885.8*
1994	2,123.9*	2,121.8	2,140.6*	2,143.2*	553.1*	619.1	556.6*	569.2*	1,044.0*	1,024.8	778.2*	947.7*

*Extrapolated to 1994 for forecast purpose

**Component of CPI (1967=100)

Source: Chase Econometrics, November, 1982; Data Resources, Inc., October, 1982; Evans Economics, Inc., November, 1982; and Wharton Econometric Associates, December, 1982

TABLE 23

BASELINE AIR CARRIER ASSUMPTIONS - DOMESTIC OPERATIONS

Fiscal Year	Passenger Load Factor Percent	Average Seats Per Aircraft Number	Average Passenger Trip Length Miles	Revenue Per Passenger Mile	
				Current \$	67¢
				Cents	Cents
Historical*					
1978	61.3	135.3	717	8.28	4.33
1979	63.0	136.4	719	8.47	4.01
1980	58.2	139.7	730	10.82	4.51
1981	57.7	142.9	749	12.93	4.86
1982	58.4	149.9	762	12.40	4.34
Forecast					
1983	59.0	153.0	765	13.34	4.42
1984	60.5	156.0	768	13.94	4.36
1985	61.5	159.0	771	14.71	4.32
1986	62.0	162.0	774	15.74	4.36
1987	62.5	165.0	777	16.72	4.38
1988	63.0	169.0	780	17.81	4.41
1989	63.0	173.0	783	19.00	4.47
1990	63.0	177.0	786	20.32	4.53
1991	63.0	181.0	789	21.71	4.60
1992	63.0	185.0	792	23.12	4.66
1993	63.0	189.0	795	24.63	4.72
1994	63.0	193.0	798	26.26	4.78

* Source Civil Aeronautics Board.

Glossary of Terms

AERIAL APPLICATION

Aerial application in agriculture consists of those activities that involve the discharge of materials from aircraft flight and miscellaneous collection of minor related activities that do not require the distribution of any materials.

AIRCRAFT CONTACTED

Aircraft with which the Flight Service Stations have established radio communications contact. One count is made for each enroute, landing or departing aircraft contacted by Flight Service Station regardless of the number of contacts made with an individual aircraft during the same flight.

AIRCRAFT OPERATION

An aircraft arrival or departure from an airport with FAA airport traffic control service. There are two types of operations—local and itinerant.

1. Local operations are performed by aircraft which:
 - (a) Operate in the local traffic pattern or within sight of the tower.
 - (b) Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the control tower.
 - (c) Execute simulated instrument approaches or low passes at the airport.
2. ITINERANT OPERATIONS:
All aircraft arrivals and departures other than local operations.

AIRPORT TRAFFIC CONTROL TOWER

A central operations facility in the terminal air traffic control system, consisting of a tower cab structure, including an associated IFR room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices, to provide safe and expeditious movement of terminal air traffic.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC)

A central operations facility in the air route traffic control system using air/ground communications and radar, primarily providing enroute separation and safe, expeditious movement of aircraft operating under instrument flight rules within the controlled airspace of that center.

AIR TAXI OPERATIONS

Air taxi operations and commuter air carrier operations (takeoffs and landings) carrying passengers, mail or cargo for revenue in accordance with FAR Part 135 or Part 121.

AIR TAXI OPERATORS

Operators of small aircraft "for hire" for specific trips. They operate under CAB Part 298 and FAR 135 which apply to aircraft of 12,500 pounds or less except under special exemption.

AIR TRAFFIC HUB

Air traffic hubs are not airports; they are the cities and Standard Metropolitan Statistical Areas requiring aviation services and may include more than one airport. Communities fall into four classes as determined by each community's percentage of the total enplaned passengers.

Large: 1.00 percent (2,657,829 passengers and over in CY 1981).

Medium: 0.25 percent to 0.99 percent (between 664,457 and 2,657,828 passengers in CY 1981).

Small: 0.05 percent to 0.24 percent (between 132,891 and 664,456 passengers in CY 1981).

Nonhub: Less than 0.05 percent (under 132,890 passengers in CY 1981).

ALL CARGO CARRIER

One of a class of air carriers holding certificates of public convenience and necessity issued by the CAB, authorizing the performance of scheduled air freight, express, and mail transportation over specified routes, as well as the conduct of nonscheduled operations, which may include passengers.

APPROACH CONTROL FACILITY

A terminal air traffic control facility providing approach control service.

AVAILABLE SEAT-MILES (ASM'S)

The aircraft miles flown in each flight stage multiplied by the number of seats available on that stage for revenue passenger use.

BUSINESS TRANSPORTATION

Any use of an aircraft not for compensation or hire by an individual for the purpose of transportation required by a business in which he is engaged.

CERTIFICATED ROUTE AIR CARRIER

An air carrier holding a certificate of public convenience and necessity issued by the Civil Aeronautics Board to conduct scheduled services over specified routes. Certain nonscheduled or charter operations may also be conducted by these carriers.

COMMON IFR ROOM

A highly automated terminal radar control facility. It provides terminal radar service in an area encompassing more than one major airport which accommodates instrument flight operations.

COMMUTER OPERATOR

Operators of small aircraft of a maximum size of 60 seats who perform at least five scheduled round trips per week between two or more points or carry mail. They operate under CAB Part 298, FAR 135, and at times FAR 121.

CONTRACT OPERATOR

An air carrier operating on a private for-hire basis, as distinguished from a public or common air carrier, holding a commercial operator certificate (issued by the FAA under FAR 121) authorizing the carrier to operate aircraft over 12,500 pounds for the transportation of goods or passengers for compensation or hire.

EXECUTIVE TRANSPORTATION

Any use of an aircraft by a corporation, company or other organization for the purposes of transporting its employees and/or property not for compensation or hire and employing professional pilots for the operation of the aircraft.

FAA FLIGHT PLAN

Specified information relating to the intended flight of an aircraft that is filed orally or in writing with a flight service station or an air traffic control facility.

FLIGHT SERVICE STATION (FSS)

Air Traffic Service facilities within the National Airspace System which provides preflight pilot briefing and enroute communications with VFR flights assist lost IFR/VFR aircraft, assist aircraft having

emergencies, relay ATC clearances, originate, classify, and disseminate Notices to Airmen, broadcast aviation weather and NAS information, receive and close flight plans, monitor radio NAVAIDS, notify search and rescue units of missing VFR aircraft, and operate the National weather teletypewriter systems. In addition, at selected locations, FSSs take weather observations, issue airport advisories, administer airmen written examinations, and advise Customs and Immigration of transborder flight.

FOREIGN-FLAG AIR CARRIER

An air carrier other than a U.S. flag air carrier in international air transportation. "Foreign air carrier" is a more inclusive term than "foreign-flag air carrier," presumably including those non-U.S. air carriers operating solely within their own domestic boundaries; but in practice the two terms are used interchangeably.

GENERAL AVIATION

All civil aviation activity except that of certificated route air carriers and air commuter operations. The types of aircraft used in general aviation (GA) activities cover a wide spectrum from corporate multi-engine jet aircraft piloted by professional crews to amateur-built single-engine piston acrobatic planes, balloons and dirigibles.

IFR AIRCRAFT HANDLED

The number of IFR departures multiplied by two plus the number of IFR overs. This definition assumes that the number of departures (acceptances, extensions, and originations of IFR flight plan) is equal to the number of landings (IFR flight plans closed).

INDUSTRIAL/SPECIAL FLYING

Any use of an aircraft for specialized work allied with industrial activity, excluding transportation and aerial

application. (Examples: pipeline patrol, survey, advertising, photography, helicopter hoist, etc.)

INTERNATIONAL AND TERRITORIAL OPERATIONS

Operators of aircraft flying between the 50 States of the United States and foreign points, between the 50 States and U.S. possessions or territories, and between foreign points. Includes both the combination passenger/cargo and the all cargo carriers engaged in international and territorial operations.

INSTRUCTIONAL FLYING

Any use of an aircraft for the purpose of formal instruction with the flight instructor aboard or with the maneuvers on the particular flight(s) specified by the flight instructor.

INSTRUMENT OPERATION

An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility or air route traffic control center.

LARGE REGIONALS

Certificated air carriers with annual operating revenues of between \$10,000,000 and \$75,000,000.

MAJORS

Certificated air carriers with annual operating revenues of \$1,000,000,000 or more.

MEDIUM REGIONALS

Certificated air carriers with annual operating revenues of less than \$10,000,000.

NATIONALS

Certificated air carriers with annual operating revenues of between \$75,000,000 and \$1,000,000,000.

OTHER USE FLYING

Use of general aviation aircraft for purposes other than those in specific categories, such as business, personal, air taxi.

PERSONAL AND PLEASURE FLYING

Any use of an aircraft for personal purposes not associated with a business or profession, and not for hire. This includes maintenance of pilot proficiency.

PILOT BRIEFING

A service provided by the Flight Service Station to assist pilots in flight planning. Briefing items may include weather information, NOTAMS, military activities, flow control information and other items as requested.

RAPCON

Radar Approach Control Facility (Air Force)

RATCF

Radar Approach Control Facility (Navy).

REGISTERED ACTIVE GENERAL AVIATION AIRCRAFT

A civil aircraft registered with the FAA that has been flown one or more hours during the previous calendar year. Excluded are aircraft owned and operated in regularly scheduled, nonscheduled, or charter service by an air carrier certificated by the Civil Aeronautics Board or aircraft in excess of 12,500 pounds maximum gross takeoff weight owned and operated by a commercial operator certified by the FAA to engage in intrastate common carriage.

REVENUE PASSENGER ENPLANEMENTS

The count of the total number of passengers boarding aircraft. This include both originating and connecting passengers.

REVENUE PASSENGER LOAD FACTOR

Revenue passenger miles as a percent of available seat miles in revenue passenger services, representing the proportion of aircraft seating capacity that is actually sold and utilized.

REVENUE PASSENGER MILE (RPM)

One revenue passenger transported one mile in revenue service.

REVENUE TON MILE (RTM)

One ton of revenue traffic transported one mile.

SECONDARY AIRPORT

An airport receiving approach control service as a satellite to a primary approach control facility, or one at which control is exercised by the approach control facility under tower enroute control procedures.

SUPPLEMENTAL AIR CARRIER

One of a class of air carriers holding certificates, issued by the CAB, authorizing them to perform passenger and cargo charter services supplementing the scheduled service of the certificated route air carriers. They are sometimes referred to as nonscheduled carriers.

TOTAL FLIGHT SERVICES

The sum of flight plans originated and pilot briefs, multiplied by two, plus the number of aircraft contacted.

U.S. FLAG CARRIERS OR AMERICAN FLAG CARRIER

One of a class of air carriers holding a certificate of public convenience and necessity issued by the CAB, approved by the President, authorizing scheduled operations over specified route between the United States (and/or its territories) and one or more foreign countries.

TABLE 14

NON-IFR INSTRUMENT C
(millions)

Fiscal Year	Total	Terminal Contro.	
		Areas	
Historical*			
1978	7.8	2.1	
1979	8.6	2.4	
1980	10.2	2.7	
1981	9.6	2.8	
1982	6.5	1.9	
Forecast			
1983	8.1	2.2	
1984	9.6	2.4	
1985	11.2	2.7	
1986	11.5	2.9	
1987	11.8	3.2	
1988	12.2	3.6	
1989	12.3	3.6	
1990	12.4	3.7	
1991	12.6	3.7	
1992	12.7	3.8	
1993	12.8	3.9	
1994	12.8	3.9	

*Source: FAA Air Traffic Activity.
1982-1983 operations reflect the temporary te
34 locations.

END